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THE ANATOMY OF
SLEEP
OR
The Art of Procuring
SOUND & REFRESHING
SLUMBER
AT WILL,
by
Dr BINNS, M.D.
Member of the Royal Soc. of
Antiquaries of Scotland,
LONDON.

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OR,

THE ART

OF

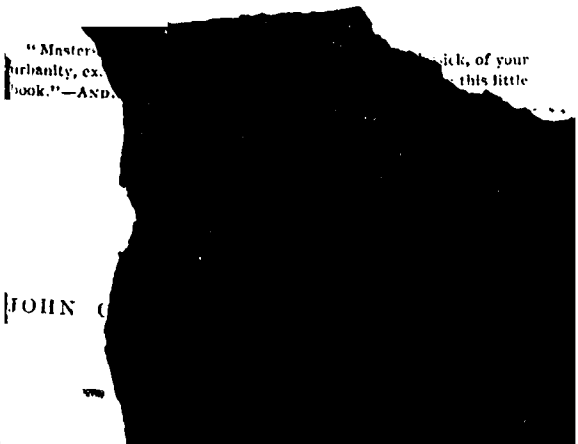
PROCURING SOUND AND REFRESHING SLUMBER AT WILL.

47861

BY

EDWARD BINNS, M. D.

FELLOW OF THE SOCIETY OF ANTIQUARIES OF SCOTLAND,
ETC. ETC. ETC.



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TO

SIR CHARLES THEOPHILUS METCALFE, BART.,

G. C. B.

LATE GOVERNOR OF JAMAICA,

&c. &c. &c.

THE ENLIGHTENED STATESMAN,

THE UPRIGHT JUDGE,

THE BENEVOLENT CHRISTIAN,

THIS LITTLE VOLUME

IS MOST GRATEFULLY INSCRIBED

BY

THE AUTHOR.

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PREFACE.

The following attempt to elucidate the laws for procuring sleep at will, by directing the activity of the cerebral organs, is, we believe, the first ever made; or, if any similar attempt has been made, it has escaped our researches. That the task might have been performed more ably, none is more ready to admit than the author; but he does not believe that any one could have undertaken or pursued it with more ardour than he has done. However, as a new mine has been opened—in the hands of those who have more leisure, and are endowed with higher talents for observation, he hopes it may lead to results which are at present as little known, or even suspected, as was the construction of a railroad when the Marquis of Worcester perceived the action of steam on the lid of his kettle.

In all cases of disease, and in every condition of the body, whether normal or abnormal, if sleep be once induced, favourable results supervene. Hence all nations have attached importance to "*sound sleep*;" and so impressed was the great

Lord Bacon with this fact, that he hesitated not to extol narcotics as "the true balm of life." And we may add, that the secret of longevity would seem in a great measure to consist in a careful regulation of the activity of the cerebral organs with a view to procure sleep. We also think we can prove that sleep is an active and positive faculty, and not a negative and passive result of fatigue or weariness; that this faculty resides in the ganglionic system; that it is the antagonism of the intellectual powers; that it is the active principle of nutrition, or assimilation, or reparation of the waste of the body; and, finally, that it is the true *vis medicatrix naturæ*, to whose vigilance we are indebted for that condition of mind and body which is called "health."

This doctrine receives support from the new views of life entertained by Dr. Stevens. That ingenious physician, in a pamphlet which has been published anonymously, says,—

"That there are a thousand things done in the body that cannot possibly be done by the mind, or by any other agent that resides in the brain. There must, therefore, be some cause to produce these effects, otherwise the body could not be organized, neither could a single movement be made in the animal frame.

"That there is in the living body, independently of the mind, an internal vital agent; or, in other words—LIFE, is the direct cause of every movement, both voluntary and involuntary, that is made in the living body.

"That in men, and all the higher order of animals, the great Solar ganglion is the seat of life; and the ganglionic nerves, which have their insertion in, and derive their origin from, this central organ, are the nervous machinery by which it works."

Liebig says, speaking of organic beings, that—"they constitute a form of reproduction independent of chemical processes. The chemical forces are subject to the invisible cause by which this form is produced. Of the existence of this principle we are made aware only by the phenomena which it produces. Its laws must be investigated just as we investigate those of the other powers which effect motion and changes in matter. The chemical forces are subordinate to the power of life, just as they are to electricity or mechanical motion, and friction."

Mayer writes, "There is in living organic nature a principle constantly in action, the operations of which are in accordance with a rational end, so that the individual parts which it creates

in the body are adapted to the design of the whole; and this it is which distinguishes organism."

It is this power, therefore, which we believe to be the cause of sleep, and to be always in action; so that at any period of the day or night that the cerebral organs cease to be stimulated externally by light, sound, or odour, or internally by study, thought, or certain forms of disease, it immediately asserts its sway, and sleep is the consequence.

In no sense can fatigue be said to be the cause of sleep; for if the state of wakefulness be prolonged after the usual period of retiring to rest, especially in children, it is then more difficult to induce sleep, than if the party had retired to bed at the accustomed hour.

With a view to establish this fact, we have taken a rather extensive, but popular, view of the phenomena developed by the cerebral organs both in health and disease; and that our reasoning may be better understood, an outline of the nervous system in animals has been incorporated with the text. It would have been better, perhaps, had we confined ourself solely to the nervous system of man, beginning with the fœtus. But our object was to show, that the lower the cere

bral organs in the scale of organization, the great er the power of sleep; or, that, that vital princ iple which opposes itself so strongly in the cold blooded animals, and is developed in their prope rties of hibernation and tenacity of life, is increase d in proportion as the complexity or vigour of t cerebral organs is diminished.

In he progression of the order of the chapters, some d lisplacement has taken place; for example, Somna MBULISM and Mesmerism should have followed, and not preceded Dreams and Catalepsy; but to the intelligent reader we have only to mention th e error to have it amended. And it must be bor ne in mind that the "Anatomy of Sleep" is to be considered strictly as a popular compilation, wh hich will account for the trifling manner in which many important questions are passed over.

It wo uld be unjust to the ingenious inventors of the Machine by which this work has been compose d, not to say, that we believe it must and will, at no very distant period, supersede in many departm ments of typography composition in the usual mode. But the use of compositors can never be entirely dispensed with, even supposing the mach hine to be ten times more perfect than it is. The opposition with which its inventors have had to contend, is what might have been antici-

pated, but was certainly unexpected b
author. But that in time it will come ge
into use, he thinks there cannot be a shad
doubt. He consequently looks upon the
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Any explanation, which any of the a
friends, or readers, may require to rende
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THE

ANATOMY OF SLEEP,

ETC.

CHAPTER I.

QUESTION PROPOSED.—DEFINITION OF SLEEP.—SOUND SLEEP.—NARCOTIC SLEEP.—ANIMALS SLEEP MORE THAN MEN.—MONKEYS.—DO THEY REASON?—ABSENCE OF SLEEP CANNOT LONG BE SUSTAINED.—DAMIENS.—LUKE. —NN MOORE.—CAVANAGH.—MEANS OF INDUCING S P.—LUXURIOUS INDOLENCE OF THE HAREM.— W —ALCOHOL.—NARCOTICS.—THE ART OF PRO- G SLEEP NO LONGER A DESIDERATUM.—HOW ERED.—THE LATE MR. GARDNER; HIS SEVERE RINGS.—CONCLUSION.

If *be a succession of ideas,* SLEEP *is the* remission; co itly,

s the art of escaping reflection. In animals, it is cessation of the functions of the voluntary muscl *hrough the repose of the senses.*

Sound, or heavy, or dull sleep, is not always an indication of health, for the apoplectic, and some aged persons, sleep much; and hydrocephalic patients, frequently. Yet, they are far removed from the condition of true health.

Narcotic sleep is produced by destroying sensibility; whereas, true sleep is the natural repose of the nervous system. From the one, we awake clouded and confused; from the other, we arise gladdened and refreshed. By the latter, the spirits are rendered buoyant and the mind cheerful; from the former, we experience depression, melancholy, and a dread of some unknown evil. The one is the consequence of health, contentment, peace, and a well regulated economy, both as regards pecuniary affairs, and physical gratifications; the other is the necessary sequent of irregularity, poverty, misfortune, or ill-health.

Most animals sleep more than man; some, indeed, for months; as the hibernating tribes of bats, dormice, marmots, and bears. Cats and dogs would seem to have the faculty at will, as have some idiots, and persons of a low order of intellect. The ideas, or impressions upon their minds, are so feeble, or so few, or are made at such long intervals, that succession is lost for want of continuity; hence, the organ retains imperfectly, and for an instant, the image which the external sens[illegible]ave presented to it; weariness supervenes, uncons[illegible]ess follows, and lastly, sleep, as a necessary conse[illegible] of inanition, is induced.

It is observed, however, that monkeys do n[illegible] so much as other animals. Whence is this appa[illegible]vi-ation from the ordinary law of nature affecting [illegible]mals? Is a monkey a reasoning animal? Observe a do[illegible]chained. He twists his chain, shortens it, and cuts himself off from his platter. Does he seek to untwist it?—to restore the links to their wonted extension? No: he continues tugging and howling, till some friendly hand frees him from his toils, and restores him to his former range.

But, how is it with the monkey, under similar difficulties? Why, he deliberately untwists the chain which he cannot sunder, and hence evinces something like reason.

Is the sleeplessness of monkeys, then, a proof of reason? We think so. But infants, they are frequently sleepless? Yes: but never in a state of health. Restlessness, in them, is always an indication of hunger, or a symptom of disease.

The absence of sleep cannot be long sustained. Damiens slept on the rack, Luke in his iron crown; and a battalion of infantry have been known to slumber during a march!* Muleteers frequently sleep on their mules, post-boys on their horses, and seamen "on the high and giddy mast." "Massa call you," said a negro to his comrade who had fallen asleep near him. "Sleep hab no massa," replied the wearied boy; and he was right.

We may bear the privation of fire, food, and even drink, longer than we can the want of sleep. Men have fasted even forty days; but, there is not on record a case of complete wakefulness, of as many hours, unaccompanied with disease. Ann Moore, of Tutbury, fasted for thirteen days consecutively, but she did not remain awake, but for a few hours at a time. The sleeping boy, mentioned by Dr. Oliver, of Bath, grew fat during his

* During Sir John Moore's retreat from Corunna, this was repeatedly noticed; and in the heat of the battle of the Nile, notwithstanding the thunder of the war, some boys who were over fatigued fell asleep on the deck! But to crown all, poor children employed in factories, when fast asleep from sheer weariness, will continue to move their little hands and fingers, as if at work, even when the machines of their unprincipled employers have stopped! Report of the FACTORY COMMISSIONERS, 1833.

hibernation; and Cavanagh, the Irishman, did not sensibly fall off, during a nine days' complete fast; but he slept the greater part of that time. Sleep, then, would seem to be, that state of the animal economy most favorable to digestion, assimilation, and nutrition.

Hence the necessity of sound and refreshing sleep to all, but especially to invalids. But, unfortunately, so desirable a consummation is not always to be attained, though mankind in all ages have taxed invention, and exhausted expedient, to procure it. The murmur of the ocean, the warbling of birds, the voice of woman, the melody of flutes, the monotonous fall of water, the narration of fables, and the luxurious prostration of the warm bath, were, at the earlier periods of human history, and are, even now, in the East, resorted to, to procure oblivion of existence. These were legitimate, and even scientific remedies, or means of commanding cessation of cerebral activity. But, the simple and the evident, the natural and the ordinary, could not long assimilate with the artificial excitement of the court, the luxurious indulgence of the palace, or the voluptuous indolence of the harem, stored with its twice five hundred syrens, flushed with the importunity of desire, and rife with all the waywardness of beauty. The excited sensibilities of earth's distempered monarchs were not to be allayed by music, birds, waterfalls, fountains, or even woman. Artifice had usurped the place of nature. The hours of refection and repose had been anticipated and abused; by the glare of torches, night had been turned into day, to prolong the revels of a favorite sultana, or, to gratify the whim of a libidinous favorite, for, wealth had acquired the art of contracting the enjoyments of a life-time within the circle of an

evening. It therefore required new soporifics, and powerful narcotics, to procure that rest, which was not only necessary for the nutrition of the body, but, for the recovery of that condition of mind, which was essential to the enjoyment of life. From this era of civilization we may date the discovery and exhibition of nepenthe, narcotics, soporifics, hypnotics, or whatever else they were called. Alcohol was then not known, and therefore was not used, though the palm wine could have been very little inferior in strength, since it was used for the preservation of the dead among the ancient Egyptians; but wine was very extensively employed to procure sleep.

It is manifest, however, from what every man knows of the effects of narcotics, wine, or, alcohol, upon the living body, that what is gained by temporary oblivion, is lost by permanent lesion of the nervous, circulatory, digestive, muscular, and reproductive systems. It then becomes a matter of primary importance, to acquire some [illegible] of command over the mind itself, which, while it should produce sleep, and procure all the advantages of fermented liquors, alcohol, and narcotics, should be unsullied with, and uncontaminated by, any of their evil consequences. This discovery is no longer a desideratum. Soothing and refreshing slumber may be procured, at will; and, the means by which it can be attained are practicable by the monarch on the throne, and the peasant in his cot; at all times and in all places; abroad or at home; in sickness or in health; in adversity or prosperity; and the young and the old, the feeble and the robust; the judge upon the bench, the counsel at the bar, nay, even the felon in the dock, may derive rest, repose, and oblivion of the

past, merely by attending to the rules which we shall lay down.

Much, however, must depend upon the idiosyncrasy of the patient, the culture of his mind, the amusements in which he indulges, the food which he consumes, the occupation which he fills, and the temper with which he wooes repose. The Chinese recommend, as a preliminary to sleep, to divest the mind of all unpleasant images; and undoubtedly, could so desirable an end be always achieved, the great secret of sleep at will would be in the possession of all men; and it is this recommendation which our system of hypnology proposes to fulfil, and by fulfilling, to invite and secure sound and refreshing slumbers. It is true, that the influence of the system will manifest itself sooner or later, according to the habits, mode of living, education and employment of the sleepless; but, nevertheless, it will succeed in all cases, and under every variety of possible calamity, inevitable misfortune, unexpected disappointment, mental anguish, or bodily suffering.

With these impressions on our mind, and with a full and perfect conviction of the efficacy of the plan, proved and approved by thousands who have had recourse to it, we unreservedly communicate the secret to the public, convinced that we are conferring a boon on our fellow creatures, while we uphold the dignity of that profession, of which we have the honor to be a member, which should labor but for the good of mankind, and which best consults its dignity and interest, by avoiding unprofessional mystery, unnecessary concealment, and fruitless exclusion.

In communicating the secret, however, let us not claim a greater share in the transaction, than the mere fact of

communication. We were not the discoverers. That honor belongs to the late Mr. Gardner, one of the most ingenious, and most amiable of men. Many years before his death, he was thrown from a chaise, and his spine severely injured. The agony which he then suffered, and which he endured for years after, until he discovered his method of commanding sleep at will, he used to describe as being intolerable. He frequently fainted from excessive pain, when a temporary alleviation of his sufferings afforded momentary repose to his senses. Sedatives, opiates, and narcotics were tried, but in vain; they aggravated rather than assuaged his anguish. But he was a contemplative man, reflective by nature, and philosophical from habit; and in the stillness and solitude of a sick room, in torture and remorseless wakefulness, PROVIDENCE found, pitied, and relieved, by enabling him to discover the art of eluding pain and conquering suffering, of subduing sleeplessness, and commanding repose, by a simple effort of volition. Before, however, we explain the theory, or lay down the rules which are to guide our readers in the acquisition of THE ART OF PROCURING SOUND AND REFRESHING SLEEP AT WILL, we shall offer an outline of such subjects, connected with the phenomena of sleep, as are indispensable to the proper understanding of the principle. We commence, therefore, with the Physiology of Life, abridged, with some trifling alterations, from a French physiologist.

CHAPTER II.

LIFE.— PHENOMENA TRACED FROM VEGETATION TO ANIMALIZATION.—PLANTS.—THE POLYP.—THE WORM. —LOBSTER.—SERPENT.—COLD AND WARM-BLOODED ANIMALS.—MAN; HIS ORGANIZATION.—WOMAN; HER BEAUTY.—DEATH.

LIFE is at first composed of a small number of phenomena, simple as the organs which support it; but as they multiply, as the machine becomes more complicated, we find it extending, enlarging and amplifying itself, progressively accumulating and concentrating its energies; while the properties which characterize it, and which are evidence of its presence, at first languid and obscure, become more and more distinct, and increase in number, intensity, and development, as we recede from the circle of the lower order of animals, and arrive at that of man, the most perfect of animated beings.

By "most perfect beings" is implied, not that the lower tribes in the great scale of creation are imperfect in themselves—for in the wonderful order of the universe every thing is perfect, and every being, from the humble lily to the towering oak, from the stationary polyp to the aspiring eagle, is so constructed, its organs so distributed, and its instincts so appropriated, as to fulfil

most favorably the purposes for which it was created—but, that the individuals constituting this higher class, are possessed of more means of enjoyment, oppose more numerous results of organization, and multiply more acts of existence, than the beings which compose the basis of the shrine of Life.

What does this PLANT present, which, springing from the earth, expands its leaves, unfolds its flowers, and having shed its seed, dies within the year? It is a being whose existence is limited to the phenomena of assimilation and reproduction. It possesses neither sensibility, nor locomotion. It is a machine constructed of a multitude of vessels, a congeries of spiral and rectilinear tubes, through which the sap, and other juices consecrated to nutrition, are elaborated and filtered. These vegetable secretions, eliminated from the salts and fluids of the earth, ascend, generally from the roots to the summit, to the trunk and the branches, the leaves and the flowers, and what remains from nutrition is evaporated by the leaves, and what the general system could not assimilate, is thrown off in transudation. Two properties direct the action of this small number of functions: the one, a contractility, scarcely apparent, though known from its results, closes or dilates the vessels to effect the transmission of the sap; the other, a latent and faint sensibility, appropriates the food which the vessels have secerned. The organs of reproduction animate for a moment this exhibition of automatic life. Appointed to perform for the parent plant, an important act in the transit of its annual existence, they are more irritable, more sensible, than the leaves and the branches. Stimulated by the great duties of re-generation, the male organs bow

themselves over the female, and scattering their fertilizing dust upon the stigma, straighten themselves again, retire from it, and die with the flower, which by a law of vegetation, shrinks into the seed, to reproduce another plant, similar in every respect to that, whose existence was expended to ensure its being!

But this plant not only reproduces itself and a multitude of others, by a law of organization, but the industry and ingenuity of man enable him to anticipate supply, and secure himself against the disappointment, contingent on seminal deficiency. With suitable precautions, the plant, divided into slips, and plunged into the earth, is re-produced and multiplied to an almost indefinite extent, thus proving the simplicity of vegetable life, and that the integral members of a plant are little dependent upon each other for existence, though the aggregation of their parts, is necessary to the constitution of a perfect individual, of its species.

If we pass, by a transition by no means violent or abrupt, from the plant to the POLYP, which forms the last link in the chain of animated nature, we find a "tube" of soft consistency, endued with sensibility and contractility, with feeling and with locomotion, but its life and organization are at least as simple as the plant. Neither the contractile fibres which carry the liquids, nor the tracheæ, which supply the various sections of the plant with air, are to be traced in the almost homogeneous mass which we are examining; nor are there any organs expressly dedicated to reproduction. A liquid, oozing from the internal surface of the "tube," moistens and digests the food it finds there; and, when the purposes of nutrition are accomplished, the "tube" contracts upon

itself and expels the residue. And, here again, the mutual independence of the parts is absolute and unconditional; divide the creature in two, or two hundred pieces, it is reproduced in every part; every section becomes a new polyp, organized and living, and, like the parent stock from which it had been severed, endued with sensibility, contractility, assimilation, and nutrition!

These animals enjoy in a more exalted degree than the plant, the condition of feeling and locomotion; their substance dilates and lengthens, they contract and expand according to the impressions which they receive; but these actions do not suppose reflection and will, any more than the spasmodic actions of the sensitive plant predicate possession of a nervous or ratiocinative system. They spring from an impression which does not extend beyond the part that feels it, and in which sensibility and contractility are blended and lost in each other; a familiar instance of which phenomena, may be cited in the detached leg of a frog spasmodised by the agency of galvanic excitation.

We ascend now to worms, the second grade in the scale of animated beings. We have no longer a mere "tube," destitute of the ordinary organs of animalization, but a series of muscular or contractile fibres; a vessel or artery subdivided by constrictions into vesicles or cells; which empty themselves into one another, by a movement of contraction, beginning at the head or entrance of the alimentary canal, and proceeding to the vent; probably a spinal marrow, or at least a series of ganglia from the sympathetic nerve; stigmata and tracheæ analogous to the respiratory organs of plants; and in some species, even bronchiæ or gills. All these accessories exhibit

most distinctly an advanced organization, and a being more perfect. Sensibility and contractility are more distinct; motion is no longer automatic, and some movements would even indicate preference or choice. The worm too may be divided into many pieces, and each piece will become a perfect worm. But this division has its limits. Disintegration cannot be carried so far as in the polyp; for as the substance of the creature is composed of elements more disimilar than that of its antitype, it may be, that too small a portion does not contain all the organs necessary to constitute another animal.

We come now to what are called CRUSTACEOUS ANIMALS, among which the lobster discovers a more complex organization. Here we first find muscles, an external articulated skeleton, distinct nerves, a spinal marrow, a brain and heart. These two latter organs, though imperfect when compared with those of animals in the ascending scale, assign the lobster to an order much above that of the worm. The first, (the brain) becomes the seat of an intelligence, which we have hitherto failed to discover in the orders of those beings we have been considering; and when the animal, urged by the olfactory nerves, pursues its prey, or warned by the sentinel of sight, flies approaching danger, we perceive for the first time, obedience to volition, and evidence of instinct. The second, (the heart) establishing a circulation of the vital fluid, supplies the internal parts with the blood necessary for their nutrition, accretion, and locomotion, and thus to a certain extent the animal is rendered independent of any exclusive locality. Sensibility and contractility here present two phenomena, though, where

the action of the one begins, or the other ends, would be difficult to say.

By the first, which is, distributed along the stomach, intestinal tube, and viscera accompanying it, the internal organs of the body are rendered obedient to the purposes for which they were constructed, namely, incretion, digestion, assimilation, and excretion. By the second, which is shewn in the increased powers of the nervous matter, and the presence of muscular fibre, the animal is enabled to place itself in connexion with the objects which surround it. Here, then, we have relation, or that series of actions which connect one being with another; life here ceases to be divisible; here its phenomena, sight, feeling, digestion, growth and locomotion, are linked together by an inexpugnable necessity. It is no longer possible to divide the animal into parts, nay, into two, without supervening a cessation of all organic operations, or, in other words, without destroying life.* Nature, however, rarely exhibits violent transition, and if the inferior parts be removed, they will be reproduced. If you break off a leg, or a claw, a little granule is seen shortly after extruding itself from the cicatrix of the wound. It then swells and enlarges; is at first soft and easily compressed; but as the process of aggregation proceeds, it becomes more indurated, till, resolving itself into a substance homogeneous with the calcareous covering which envelopes the other members of the animal, it becomes indistinguishable from the original organs.

If, from the white-blooded animals, the Crustacea, we ascend to the red and cold-blooded, such as FISHES and REPTILES, this power of reproduction becomes more limited, and life more involved in organization. If we abscind

the fin of a fish, the tail of a serpent, or the foot of a frog, the separated parts are not reproduced, or if reproduced, the organization is very imperfect. All these creatures maintain, with the medium in which they live, relations of more stringent dependence. Gills in these, and lungs in those, are superadded to a heart. But, though the presence of these organs is absolutely essential to life, their actions are not so frequent, nor of such momentary necessity for its continuance, as we shall see in the economy of the Mammalia. "The serpent passes long winters torpid with cold, in holes where he has no air; without breathing, without any motion of life, and in all appearance dead. These creatures, like all reptiles, are able to breathe only at long intervals, and to suspend, for a time, the admission of air without risking their existence. Here the vital powers are distinct and strong, and differ from those of the more perfect animals, and of man, by very slight shades. The heart and vessels of the fish, feel and act within him without his consciousness. Further he has senses, nerves, and a brain from which he has intimation of whatever can affect him; muscles and hard parts, by the action of which he moves and changes his place, adapting himself to the relations that subsist between the substances around him, and his own peculiar mode of existence.

"We are come, at last, to the red and warm-blooded animals, at the head of which are the MAMMIFERÆ and MAN. They are entirely alike, save some slight differences in the less essential organs. There is not one that has not the vertebral column, four limbs, a brain which fills exactly the cavity of the skull, a spinal marrow,

nerves of two sorts, five senses, muscles partly obedient to the will, partly independent in their action. Add to these, a long digestive tube coiled upon itself, furnished at its mouth with agents of saliva and mastication; vessels and lymphatic glands, arteries and veins, a heart with two auricles and two ventricles, lobular lungs, which must act incessantly in impregnating the blood* that passes through them, with the vital part of the atmosphere, and failing to do which, life is suspended or gone. None of their organs live but while they partake in the general action of the system, and while they are under the influence of the heart; all die, irrecoverably, when they are parted from the body of the animal; and are in no way replaced, whatever some physiologists may have said on pretended regeneration of the nerves and some other parts.

"Every thing that is important to life is to be found in these animals; and as the most essential organs are within, and concealed in deep cavities, a celebrated naturalist was correct in saying, that all animals are essentially the same, and that their differences are in their external parts, and chiefly to be observed in their coverings and their extremities."

* Dr. Copland has a long and interesting note upon the subject of respiration appended to this word. But it would be carrying us further than was contemplated to go into the subject. It would have been more in accordance with the views now entertained, had our author used the words, "act incessantly in de-carbonizing the blood," but in a popular and very general outline of the phenomena of life, as traced from vegetables to man, scientific nicety cannot be attained, or minute physiology enforced. Those who are desirous of further information may consult the works of authors who have written expressly upon the subject.

Such, then, are the Phenomena of Life, and such the various modes of development of its principle of action; assimilative in the plant, presumptive in the polyp, inceptive in the worm, progressive in the lobster, discursive in the serpent, and inventive in man, where it approximates the culminating summit of creative excellence.

Of this form so wonderful, this organization so complete, this being so complicated, it will naturally be expected that a brief description at least will be given. It is true, that we can offer little, that any man of ordinary industry may not gather for himself, and nothing that the educated and the well informed do not already know. But our ideas, as Locke remarks, are painted in fading colors, and if not frequently renewed, are soon entirely obliterated; and though the physiologist may smile at the following brief and faint attempt, still it may remind him of some principle neglected, some point forgotten, or some theory condemned: while the general reader, the man whose avocations preclude him from acquiring knowledge, or eliciting facts, from poring over the learned and elaborate works of Magendie, Blumenbach, or Hunter; or dipping into the recondite pages of Müller, Marshall Hall, or Elliotson, will probably thank us for the labor we have saved, and the information we have afforded him.

The human body is composed of solids and fluids. The solids consist of the bones, ligaments, tendons, muscles, integuments, hair, nails, nerves, arteries and veins. The fluids are the blood and its numerous secretions, as the gastric juice, the bile, the tears, and perspiration. The head is so skilfully formed, and so artfully placed upon

the shoulders, and so well protected from external casualties, that strike it in any part, we shall find that the resistance opposed, is equal almost in all cases to the momentum of the blow. Or, in other words, it is so shaped, as to cause nearly all blows to glance off, however dexterously directed. Within its bony cavity, reside the organs of sensation and all our reasoning faculties, and from its pulpy mass, we chiefly derive two of the most important of our senses—seeing, and hearing. The chest is broad and ample, to give play to the lungs, whose incessant action agitate the crimson current, that, in its circuit round the body, has lost a vital principle which it returns to renew, and acquired a property it seeks to remove.

Thin, tortuous, pellucid vessels, called veins, take up the blood, driven by the pulsation of the heart through the conduits, called arteries, to the extremest points of the capillary tubes, and by a slow and equable, a regular and progressive motion, a sort of creeping backwards on themselves, meet, mingle, join, and osculate with others, till, growing larger and larger, they pour their contents into the capacious channel of the vast conduit, called the Vena Cava. This is the great river of the body, which empties its current into the right auricle, or reservoir of the heart. But here, it is not destined to slumber like an inland lake, but, by a beautiful provision of nature, by one of those simple, yet convincing proofs of design, which surprise us at every step in creation, and compel our wonder and admiration, the hollow viscus closes firmly on the fluid, urging it into the ventricle, which, in its turn, contracts also, and forces it into a vessel prepared

to convey it to the lungs, there to be again rendered fit for the purposes of life, by being elutriated of the impurities it has collected in its circuit round the body. Having, then, been exposed to the action of the air through the thin filament of the lungs, and that this exposure has been great, some idea may be formed, when we mention that Dr. Monro estimated the superfices of the lungs at thirty-two times that of the body!—it is conveyed by another vessel to the right auricle of the heart, which again empties itself into the ventricle, whose function it is, by the medium of the aorta, to distribute its contents throughout the minutest ramifications of innumerable capillaries.

The muscles enable us to move from place to place; the eyes, to admire nature, and all that is beautiful in the arts, or lovely in woman; the ears convey the most delicious melodies, or warn us of approaching danger; the tongue guides us in our choice of food, or enables us to exchange our thoughts, to express our emotions, to utter our complaints, or disclose our secret inclinations; the hand, at once, one of the most simple, and the most beautiful of mechanic structures, so delicate in woman, so powerful in man, so admired, so dilated upon, so highly estimated, that Helvetius, a French philosopher, attributed to it, all that superiority which we possess over the merely animal creation, is the prime organ of touch, of prehension, apprehension, labor, mechanism, the arts! Without the hand, our floating castles, gigantic steamers, frowning towers, magnificent temples, high-arched domes, and even the lowly cot, would not, could not, have existed. What labor to

construct the lofty cathedral! What force to build the mighty ship! What delicacy to weave the shining satin! What exquisite sensibility to perceive the smooth pile of the glossy velvet! Then, the thousand arts, that, in a great city, employ, feed, clothe, lodge, amuse, engage, preserve, and sweeten life—and all from this one organ!

Besides these organs, we find others, destined to digestion, assimilation, sensation and reproduction. In a bony canal, which runs through the entire length of the body, is lodged a white substance, called the spinal cord. From this proceed numerous white threads, protected by neurelema or covering, called nerves. These supply the muscles with their motive powers; aid the stomach in its process of digestion; regulate the movement of the diaphragm; control the action of the heart; direct the energies of the liver; and assist in conveying the impressions of external objects to the organs of the brain. On them, too, depend, in a great measure, the pleasurable sensation of warmth, the disagreeable feeling of cold, the exquisite sense of touch, and the agonizing twitch of gout. They constitute, with the optic and olfactory apparatus, the sentinels, which give warning to the Army of the Phenomena of Life, of the advance of sickness, the coming of age, and the approach of death. Finally, they watch over and protect us from infancy to senility, and only fail us (at least the sense of touch) when all other organs have ceased to act, or are rendered incapable of action.

This is but a feeble sketch of the anatomy of man. Have we considered his capacious forehead? His expressive eye? His proud majestic gait? Or, stealing from the

poet's store one feathery shaft, attempted to describe that loveliest of all created things, a graceful woman? Has memory, benumbed with the cares of life, forgot the glancing eye and slender ankle; the globes of liquid light, the luxurious profusion of the auburn curls, the dimpled cheek, the fair neck, the rosy lip, or billowy bust, and soul entrancing form?

We omit the task, not that we do not feel, but because we cannot, as we could wish, write all we feel, of God's transcendent work, a lovely woman. Our days of love, at least of passionate love, are fled, and have left behind subdued emotions, and more refined affections. But still, we cannot bear to think, much less to write, of woman, as mere organic matter, formed of nerves, and bones and blood! But, alas! reality is importunate, and mortality knows no distinction. That liquid eye must grow dim; that rosy tint must fade; the plump figure fall away in angles; and the cold earth, "which she scarcely seems to touch," when youth and health are hers, must receive that altered form! Who would recognize in the old and tottering hag, stooping by the way-side road to implore a passing dole, the fair sylph, that, some forty summers since, glided like a thing of air across the daisy-covered mead, or carolled as she trod the oft frequented foot-path of her native village, to meet the loved and cherished one beneath the dew-sprent hawthorn tree? But away with moralizing: Death is the last stage of our existence. We have made the circumnavigation of the voyage of life; have fulfilled the end of being; have experienced calms and storms, and encountered fierce enemies, and struck on hidden rocks, and overcome all these perils, but to lay our bones in

earth; and the phenomena of life extinct, the aggregation of matter, enfranchised from the bondage of organization, resolves itself into its primitive elements. The salts of the body are restored to the earth, and the soul returns to God!

CHAPTER III.

THE BRAIN.—HOW DIVIDED.—THE PINEAL GLAND.—THE SEAT OF THE SOUL.—PROPORTION OF THE BRAIN TO THE SIZE OF THE BODY.—SMELLING.—HEARING.—SEEING.—TOUCHING.—TASTING.—SENSATION.—VOLUNTARY MOTION.—INVOLUNTARY MOTION.—CIRCULATION IN THE BRAIN.—CONNEXION BETWEEN THE BRAIN AND HEART.—MAGENDIE.—THE CEPHALO-SPINAL FLUID.—ACTION OF THE BRAIN UPON THE IMPRESSIONS TRANSMITTED TO IT BY THE NERVES.—THINNESS OF THE BONES OF THE SKULL IN OLD AGE.—ARCHÆUS.—ANIMAL SPIRITS.—THE BRAIN THE CENTRE OF ANIMAL LIFE.—CIRCULATION.—THE HEART A DOUBLE ORGAN.—RESPIRATION.—CONSIDERATION OF THE SUBJECT DEFERRED.

PHYSIOLOGISTS divide what in ordinary language is called the BRAIN, into various portions, as the cerebrum, cerebellum, and medulla oblongata, and these are again subdivided.

But, this minuteness is not necessary for our purpose; and, a few general remarks, therefore, on its anatomy and functions, will suffice.

The Brain is lobulated or spherical in most animals; while its convolutions are very numerous, and would seem to answer particular purposes; hence the SCIENCE OF PHRENOLOGY. The pineal gland, which Descartes made the mansion of the soul, exists not only in the mammalia (man, horses, elephants, whales), but in the turtle. The base of the brain, in man and monkeys, is divided into

lobes, but in most other animals, there is very little, if any, division. The proportion, which the brain bears to the medulla oblongata, or that portion of the cerebral mass, which is continued from the base of the brain, down to the spinal cord, is the measure of the intellectual faculties. In some animals, the brain is very small in proportion to the size of the body, and its use, in these cases, is principally for hearing, and smelling. Smelling is the office of the olfactory nerve, which arises, from the brain, and of another called the fifth, arising from the medulla oblongata.

Hearing depends upon the auditory nerve, the fifth, the portia dura, or hard portion, and the glosso-pharyngeal, or, that nerve which supplies the tongue and pharynx.

Sight depends upon the optic nerve, which arises from the brain, and four other nerves, called, by anatomists, the third, fourth, fifth and sixth pairs of nerves, which arise from the medulla oblongata.

Taste depends also upon the medulla oblongata; for that sense is the joint effect of the fifth, glosso-pharyngeal, and ninth pair of nerves, which all arise from it.

Sensation we owe to the fifth pair, and to the spinal nerves, arising again from the medulla oblongata. Voluntary motion is referable to the fourth, fifth, sixth hard portion, ninth, accessory and spinal nerves, and the oblong and spinal medulla.

Involuntary motion "is under the sympathetic, or such of the common motive, as have their powers directed by the action of moving parts placed in contact, or, connexion with them; it is, therefore, principally under the influence of the oblong and spinal medulla" (Swan).

It may, therefore, be said, that we owe but two of our

senses, smell and taste, to the brain proper, and even those not entirely. All the others, hearing, tasting, feeling, and voluntary and involuntary action, owe their being to the medulla oblongata and the spinal cord.

With regard to the circulation in the brain, as it differs from that of the body generally, it may be proper to say a few words. In the first place, there is no organ of the body, which, in proportion, receives so much blood. According to Haller, of the whole fluid mass that passes through the aorta, this viscus receives no less, than from one third, to one half! So large a quantity, and propelled with so much force, would have entirely destroyed the delicate structure of its parts, had not nature, as a French physiologist has remarked, "multiplied precautions to weaken its impulse." Compelled to ascend against its own weight, and contrary to hydraulic laws, it loses from that cause alone a part of its motion.

The vertical column, in its ascent, is forced against the angular curvature, which the internal carotid artery forms in its sinuous passage, along the bony canal of the hard portion of the temporal bone, and as this curvature, surrounded or protected by osseous substance, cannot straighten itself, the force of the impetus of the flow of blood is broken, and its velocity considerably lessened. The artery, immersed in the cavernous sinus, as it emerges from the carotid canal, is easily dilated, and the branches, into which it divides itself, on arriving at the base of the brain, have exceedingly thin coats, and so weak, that they collapse like the veins, when empty. This extreme weakness of the cerebral arteries, Richerand observes, explains their frequent ruptures, when the heart sends the blood into them too violently; and it is

thus, that, the greater part of sanguineous apoplexies are occasioned, many of which, however, take effect without rupture, and by the mere transudation of the blood through the arteries. These vessels, like the branches arising from their divisions, are lodged in the depressions, with which the base of the brain is furrowed, and do not enter its substance, till they are reduced to a state of extreme tenuity, by the further divisions they undergo, in the tissue of the pia mater.

Notwithstanding the proximity of the brain to the heart, the blood reaches it, then, with an exceedingly retarded motion; it returns, on the contrary, with a motion progressively accelerated. The position of the veins at the upper part of the brain, between its convex surface and the hollow of the skull, causes these vessels, gently compressed by the alternate motion of rising and falling of the cerebral mass, to empty their contents readily into the membranous receptacles of the dura mater, known by the name of sinuses. All these communicating, form a reservoir, sufficiently large, from which the accumulated blood passes into the jugular vein, the conduit by which it again enters the general circulation. Its flow is also favored by its own weight; and as the calibre of the vein is large, its coats very thin and capable of extension, a retrograde motion is very difficult.

It may be said, then, that the brain receives a large proportion of oxygenous blood, more aerated, according to Boerhaave, than that which is distributed to the inferior organs of the body, and that it finds, in its course thither, numerous obstacles which impede and retard its motion; while, on the contrary, organization, the hydraulic law, and the alternate rising and falling of the viscus itself,

favor and accelerate its return. Let me observe, says the author, to whom we have been greatly indebted for this sketch, to conclude what I have to say on the circulation of the brain, that, that of the eye is nearly allied to it, since the ophthalmic artery is given out by the internal carotid, and the ophthalmic vein empties itself into the cavernous sinus of the dura mater. Accordingly, the redness of the conjunctiva, the prominence, the brightness, the moistness of the eyes, indicate a strong determination of the blood towards the brain. Thus, the eyes are animated at the approach of apoplexy, in the transport of a burning fever, and during delirium, which is a dangerous symptom, of malignant or ataxic fevers. On this connexion of the vessels of the eye depends the lividity of the conjunctiva, whose veins, injected with a dark colored blood, indicate the fulness of the brain, in the generality of cases of suffocation.

The connexion between the brain and heart is absolute and unconditional. If the flow of blood, from the latter to the former, be checked, but for a single second, death generally ensues. It may be partially, arrested however, without grave consequences. Galen tied both carotids of a living animal, without its appearing sensibly affected; but, if the vertebral arteries be tied, the animal immediately ceases to exist. In this instance, death would seem to be attributable to the interception of arterial blood to the brain, the natural pabulum of that organ.

Perhaps, one of the most remarkable circumstances connected with the brain, is, the discovery by Magendie, of a copious exhalation of a limpid fluid, contained between the pia mater and arachnoid coat. It has been called the CEPHALO-SPINAL FLUID, and is supposed to be,

"additional protection, to the nervous masses, against sudden shocks and concussions." M. Desmoulins says, that it is met with more abundantly in mammiferous animals, than in fishes and birds; and M. Magendie states, that it gradually disappears after death, so that but little remains twenty hours after this event. It has been found in quantities so large, when the canal has been punctured as deep as the pia mater, in living animals, as to be thrown out to the distance of several inches. It is most abundant in the cervical and lumbar regions, and at the height of the fourth ventricle, and it flows, not only from the spinal canal to the cranial cavity, but also from the exterior of the cerebrum into its ventricles. This fluid, says Dr. Copland, seems to adapt itself to the positions, and movements, and conditions of the brain and spinal cord; to be diminished, when the blood-vessels of the brain are congested or injected; to preserve a certain degree of pressure, by becoming more abundant, when the brain is either less vascular, or of diminished bulk; and to protect the nervous masses from the effects of concussions, and external injuries. In its constitution, it resembles, in every respect, the most limpid of the serous exhalations of the body. M. Magendie has found it very abundant in idiots, and persons of weak intellects, and, on the contrary, in small quantity, in those whose intellectual faculties were active and fully developed: hence he is led to infer, that the quantity of this fluid, is in an inverse ratio to the development of the mental faculties.

Cabanis has remarked, that the brain acts upon the impression transmitted by the nerves, as the stomach, upon the aliments it receives by the œsophagus; and

Richerand adds, it does in its own way digest them. Set in motion by the impulse it receives, it begins to react, and that reaction is the perceptive sensation, or perception. From that moment the perception becomes an idea, it enters as an element into thought, and is subject to the various combinations, that are necessary to the phenomena of understanding.

The tendency of the brain to rise, produces very marked results in the cavity of the skull. In early life, the interior surface is smooth and unfurrowed, but, as we advance in age, depressions appear, and proceed deeper and deeper; and it has happened, in very aged persons, that the bones of the skull have become so thin by this constant action, that the pulsations of the brain were perceptible through the hairy scalp!

The manner in which impressions, produced by the senses, are conveyed to the brain, is enveloped in great obscurity. It is probable, though the supposition cannot be verified, that the nerves act by means of a subtile, invisible, impalpable fluid, to which, some philosophers have given the name of ARCHÆUS, and which the ancients called ANIMAL SPIRITS. We judge of its existence, only from its effects, and, therefore, presume that it is present in the body. We cannot demonstrate the presence of the electric, magnetic, or galvanic fluids, yet who doubts their existence? We may, then, conclude our remarks upon the brain, with a quotation from Richerand, to the effect, that the flow of the nervous fluid takes place, from the extremity of the nerves, to the brain, so as to produce the phenomena of sensation; for, when the nerves are tied, the parts below the ligature lose the power of sensibility. Again,

all the impressions received by the organs of sense, and by the sentient extremities of nerves, are transmitted to the cerebral mass. The brain is, therefore, the centre of animal life; it is the spring of all voluntary motion; and this centre is, to the functions of relation, as the heart, to the function of nutrition; and finally, it may be said of the brain, as of the heart, "omnibus dat et ab omnibus accipit"—it receives from all, and gives to all.

CHAPTER IV.

BICHAT'S DEFINITION OF SLEEP.—SOUND SLEEP.—SLEEP AGITATED BY DREAMS.—CONDITION OF SLEEP REFERRED TO THE HEART, THE LARGER VESSELS, THE STOMACH, AND BRAIN.—STIMULI WHICH PROLONG THE STATE OF WATCHFULNESS.—CAUSES WHICH INDUCE SLEEP.—COMPRESSION OF THE BRAIN.—IMPEDED CIRCULATION IN THE BRAIN DURING SLEEP.—REMARKS ON BICHAT'S THEORY.—PHENOMENA OF NATURAL SLEEP DESCRIBED.—THE ORDER OF SUCCESSION OF WAKING PHENOMENA.—DURATION OF SLEEP.—FREDERIC THE GREAT.—NAPOLEON.—THE DUKE OF WELLINGTON.—HOURS DEDICATED TO REST.—ALFRED'S DIVISION OF THE TWENTY-FOUR HOURS.—INFANCY.—YOUTH.—OLD AGE.—PARR.—DE MOIVRE.—SLEEP OF THE AGED.—BAXTER THE COACHMAKER.—GENERAL ELLIOT.—NEGROES IN THE WEST INDIES.—THE SPANIARDS.—PERSONS WHO SLEEP LITTLE.—ACTION OF THE ORGANIC FUNCTIONS DURING SLEEP.—ABSORPTION.—DANGER OF SLEEPING IN MARSHY PLACES.—NUTRITION.—CASE FROM RICHERAND.—DREAMING.—PHENOMENA OF DREAMING DESCRIBED.—DR. ELLIOTSON'S DESCRIPTION OF THE CONDITION OF THE CEREBRAL ORGANS DURING SLEEP.—IGNORANCE OF PERSONS GENERALLY AS TO MEDICAL OR PHYSIOLOGICAL KNOWLEDGE.—ILLUSTRATIVE ANECDOTE.—SPURZHEIM'S, GALL'S AND CARMICHAEL'S THEORY.—SOMNAMBULISM.—CONDUCT OF SOMNAMBULISTS.—MESMER.—REFLECTIONS ON THE CONDITION OF MESMERISM.—M. LAFONTAINE.—SIR HUMPHRY DAVY.—CASE OF ANIMAL MAGNETISM.—REMARKS.—SINGULAR PHENOMENA EXHIBITED BY ONE OF DR. ELLIOTSON'S PATIENTS.

BICHAT defines sleep to be, the general assemblage of particular sleeps, derived from that law of animal life, in which a constant succession and remission of periods of functional activity are observed; a law, he affirms, which pointedly distinguishes it from organic life. He

remarks, that there are various modifications in this periodic state, to which all animals are exposed. The most common sleep, is that in which the whole external life, that is, the senses, perception, imagination, memory, judgment, locomotion, and the voice, are suspended. The least perfect, affects only a single organ. Numerous gradations are experienced between these two extremes: sometimes, perception, locomotion, and the voice are suspended, imagination, memory and judgment remaining active; sometimes, locomotion and the voice are added to the latter. This is the sleep agitated by dreams. Other physiologists have referred the condition of sleep to the heart, the larger vessels, the stomach and the brain; but he considers their systems too narrow and confined, and strongly condemns them. He asks, why do light and darkness, in the natural order of things, correspond respectively to the activity and repose of the external functions? Because, during the day, the animal is surrounded by a multitude of exciting causes. A thousand things exhaust the powers of the sentient and locomotive organs, fatigue them, and thus prepare a relaxation, which is favoured at night by the absence of all external stimuli. Thus, in the modern practice of life, in which this order is partly inverted, we assemble round us at night, various stimuli, which prolong the state of watchfulness, and make the intermission of animal life coincide with the first hours of dawn, favouring this inverted order of being, by excluding all objects, as light and sound, that might produce sensations. (RECHERCHES PHYSIOLOGIES SUR LA VIE ET LA MORT.)

It has been said, that Bichat's remarks are rather illustrations, than proofs, that the state of fatigue of any particular organ is exactly the same as its condition in

sleep, and we shall be able to show, in its proper place, that this opinion is correct.

"Some have fancied the brain compressed, and compression will disqualify the brain for its functions and cause sleep, even coma, apoplexy and death: but there is no proof, or even probability of this, in ordinary sleep. Blumenbach, says, that sleep, probably, consists in a diminished or impeded flow of oxygenated (arterial) blood to the brain; for that fluid is of the highest importance, during the waking state, to the re-action of the sensorium upon the functions of the senses and upon the voluntary motions.

Now it is certain that the supply of arterial blood to every part, and especially to the nervous system, is requisite to its functions and its life, and that, in proportion to the activity of a part, is the activity of its supply of arterial blood. Analogy therefore renders it extremely probable, that during the inactivity of sleep, the brain, having less occasion for arterial blood, has a less vigorous circulation, than during the waking state; and we know, that whatever diminishes the ordinary determination of blood to the brain, or impairs the movement of the blood through it, disposes to sleep. But although this be granted, it must be viewed, not as the cause, but as a circumstance, or, in fact, a consequence, of ordinary sleep. Increase the activity of an organ, you increase its circulation; diminish its activity, you diminish its circulation." (DR. ELLIOTSON.)

The phenomena of NATURAL SLEEP may be thus described. Its approaches are marked by a sense of muscular fatigue; the legs become weary, the arms indolent in their movements, and the hand unsteady in its object. Yawning, without our having the power to prevent it, fol-

lows or precedes this state; the attention languishes; the most interesting narrative fails to awaken it; we become captious, and even fretful. In the mean while, external impressions begin to fade. If we attempt to read, the lines run into each other, and, if we look from the candle to the page, the letters will appear of a greenish, or bluish cast. The memory becomes confused; the eyes grow dim and lose their brilliancy, while the upper lids fall, in spite of our efforts to uphold them; next, the muscles of the back and neck relax their tension, and the head falls unwillingly forward. But the sense of hearing remains still unimpaired, and we hear, and understand the conversation of those around us, when we can no longer distinguish their persons, or perceive their gestures. Anon, a succession of pleasing reveries approach and depart, in calm succession. The brain appears to float in a dreamy sea of peaceful enjoyment; a pleasing delirium supervenes, and we no longer wake, we sleep. The organs of the senses, laid asleep in succession, awake in the same order. Sounds and light produce impressions, confused at first, on the eyes and ears. In a little while, these sensations grow distinct; we smell, we taste, we judge of bodies by the touch. Thus it is, then, we return to the state of wakefulness, to a sense of the condition of our being.

The cause of waking is said to depend chiefly on the flow of blood to the brain, induced by external impressions on the senses, as the return of light, and noise, the rising of the sun, and even habit. Many sleep soundly, amidst noises that would distract those unaccustomed to them; while others, who have habituated themselves to rise at a particular hour, will awake every morning at the precise period; nay, the phenomena

of waking may be brought under control of the will, and it is but necessary to will strongly, and we awake at the desired hour. (RICHERAND.)

Of the duration of sleep, the period varies in various men. John Hunter, Frederic of Prussia, Napoleon, and other great men, slept but little. The Duke of Wellington is also a little sleeper. Boerhaave says, that on one occasion, his mind being much engaged, he could not sleep for six weeks. He probably meant to write not "soundly." He adds the case of a student, who adopted the strange theory, that the natural condition of man was sleep, and to test the truth of the doctrine, slept eighteen hours of the twenty-four, and, as might have been expected, died of apoplexy. The Elder Descrozilles seems to have slept but two hours in the twenty-four. (ANNALES DE CHIMIE.) However, the number of hours passed in sleep varies from six to twelve. The indolent, and those whose avocations or fortunes doom them to inert life, sleep many more hours than are necessary. But eight* or nine hours would seem to be about the fair proportion, which every man ought to take, who values his health, or expects his intellects to be in a fit state to enjoy life.

Habit, climate, constitution, calling, age, modify, however, the duration. Infancy requires much sleep. Youth,

* Alfred divided the twenty four hours in the following manner; eight hours for rest, eight hours for labour, and eight hours for amusement. Jeremy Taylor allowed but three hours of the twenty-four for sleep; Baxter, four; Wesley, six; Lord Coke and Sir William Jones, seven; and Sir John Sinclair, Willich, and Dr. Elliotson, eight hours of the twenty-four. Nine, however, will frequently be found not too much for literary men.

more than is generally allotted to it, in England; and manhood is the medium between the wants of youth, and the necessities of age. Some old people, as we have previously remarked, sleep much. Parr slumbered away the greater part of his time, and De Moivre, when eighty-three years of age, slept twenty hours of the four and twenty. But these are exceptions to this law of nature; and Richerand affirms, that old men have short sleep, light, and broken; as if, says Grimaud, according to Stahl's notions, children foresaw that, in the long career before them, there was time enough for performing at leisure all the acts of life; while old men, near to their end, feel the necessity of hurrying the enjoyment of good already about to escape. Dr. Elliotson writes, "Old people sleep lightly and frequently; and altogether but little, unless lethargic diseases come upon them, which is very common. I heard Baxter, the coachmaker, declare, he never took more than three hours sleep, during the most active period of his life. The celebrated General Elliot never slept more than four hours out of the four and twenty; and his food consisted wholly of bread, water, and vegetables."

Climate and custom, however, exert much influence on the duration of sleep. Long says, that the negroes in the West Indies sleep little, while the Spaniards retire every day at noon to their siesta. Men engaged in arduous or dangerous enterprises, in study, or in employments which require constant attendance, with short intervals of relaxation, sleep little. Examples of this may be drawn from the lives of great commanders, book-worms, and watchmen, waiters at hotels, and gamblers at watering places.

During sleep, neither the assimilative, nor organic functions, cease to operate; and digestion, absorption, circulation, respiration, secretion, and nutrition, continue, though circulation, and respiration, are much slower; but absorption is particularly active. Hence the danger of sleeping in marshy places, or where there is a succession of paludial exhalation.

Indeed, it may be justly asserted, that the operations of the system languish in a degree proportionate to that in which they are deprived of their natural excitements, whether these excitements be food, air, exercise, or amusement; whether they are corporeal or mental, or whether they are external or internal, with respect to their modes of existence, and their manner of operation on the body. When, therefore, the system is deprived of a part of these stimuli, of the influence of the mental operations, and of the excitements of sensation and voluntary motion, as it is during sleep, its operations are necessarily more languid and weak, and, consequently, it is more readily impressed by many of the causes of disease, especially by those which are productive of fever, than during the waking state. (ELEM. OF PHYSIOL.) Nutrition, on the other hand, would seem to be best performed during sleep; confirmatory of which opinion, Richerand adduces a curious case. A man, of forty years of age, seized with a general imbecility, remained about a year and a half in the hospital of St. Louis, for the cure of some scrofulous affection. During this long period, he lay constantly in bed, sleeping five sixths of the day, tortured with devouring hunger, and passing his short moments of waking, in eating. His digestion was always quick and easy; he preserved his

plumpness, though the muscular action was extremely languid, and the pulse very weak, and very slow. In this case, the moral affections were limited to the desire of repose and food. Oppressed with irresistible sloth, says the writer, it was never without great difficulty that he could be brought to take the slightest exercise. Bordeu happily characterized the case, by saying, that the man lived under the dominion of the stomach.

Dreaming, is that condition of the brain, when one or more organs, or functions, are called into action, during the repose of the voluntary muscles, and the following may be taken as an outline of the phenomena: after a hearty supper, or, sometimes, without this obnoxious meal, and during sleep, a portion of the cerebral organs become excited. Imagination reproduces scenes before visited, or awakens sensations formerly experienced; or, it becomes inventive, and discovers new places, new forms of things, and novel modes of sensibility. It conceives, fancies, or creates, associates, and combines objects; sometimes incongruous and discordant; sometimes natural and normal; often exquisite and beautiful; but more frequently, horrible and repulsive. We see huge monsters; vast plains; innumerable armies; indescribable creatures; transcendant beings; unimagined forms; inscrutable chasms; stupendous mountains; or we witness astounding prodigies. We perceive the sun and moon on our right hand; the stars on our left; the elements, fire, air, earth, and water, at our feet; and the glory and the brightness, and the brilliancy of ten thousand thousand meteors, above our heads. We hear, we talk, we move; walk, run, swim, fly. No obstacles arrest, no impediments obstruct our progress. Space, time, and

probability, are annihilated. We are, at once, in China and Peru; in London and Affghanistan; in a boiling caldron, or a frozen lake. Transition is as rapid, as the electric bolt, that, shot from the sky, topples the lofty minaret to the ground. We experience all the emotions of love, joy, hope, fear, grief, surprise, and terror. We caress, exult, anticipate, tremble, weep, shrink, and shudder, in a second of time; and all these fancies, these crude and incredible imaginings, are recollected and remembered when we awake, and sometimes are never totally forgotten. This then is the condition of dreams.

Dr. Elliotson, speaking of dreaming, says, in sleep, the function of the brain is suspended, and, if it is perfect, there is no sensation, no consciousness, thought, emotion, or volition: but the degree of suspension is extremely various. In ordinary sleep, the mind is susceptible of sensations, and able, if these are unpleasant, to make an effort to remove their causes; whether to remove the uneasiness of impeded circulation in the lungs, by breathing, or to draw away the hand, when tickled, or change our position, as some do continually in sleep. One, or more faculties, is often active, and one idea associates with it another, intellectual or moral, so that we dream; but the activity of the mind is partial, and though we are able, occasionally, even to reason correctly in our dreams, we are not sufficiently ourselves, to discover the incompatibility of many circumstances which we fancy. In a higher degree of activity, we answer questions put to us, although often ridiculously, as our deficiency of mental power prevents us from keeping our associations in a proper train; and we sometimes even perform a regular series of movements.

With regard to the explanation of these phenomena, the following theory, from a very ingenious writer, Mr. Carmichael, who adopted and illustrated the doctrines of Spurzheim, must content our readers; for, as our object is neither to theorize, nor to advance new subtleties, to startle with novelty, or to confound with paradox, we prefer sheltering ourself under the shadow of established celebrity, rather, than, by an arrogant exhibition of technicalities, expose the poverty of our science, or, by a vain ostentation of erudition, discover the littleness of our knowledge. There are few men, especially in the medical profession, who can stoop to the humiliation of admitting their ignorance, or bring themselves to the degradation of confessing their inability to explain the ordinary phenomena of nature, much less, to inform their friends and acquaintances, that they really have no very general idea, or, at least, no concise notion, of the cause of the phenomena, or the symptoms, to prescribe for the removal of which they are so frequently solicited. We do not wonder at this; for, nine out of ten of the patients, who consult them, are so unacquainted with physical science, so unread in the opinions of physicians, so enslaved by indolence, or so absorbed in the acquisition of wealth, so devoted to pleasure, or so indifferent to knowledge, or, in a word, so profoundly ignorant of the higher and more exalted walks of human knowledge, except, perhaps, in the acquisition of occasional and factitious scraps, remorselessly appropriated without gratitude or acknowledgement from the forgotten pages of the laborious reviewer, that, we confess, it is a very impolitic step to take. Even while writing these pages, a gentleman, who is well read in the general literature of the day, not

connected with the profession, and of whose judgment, in the ordinary matters of life, we entertain a very high opinion, in speaking of an absent physician, said to us, "Would you believe it, Doctor? Dr. Dash, who I really once thought a very clever man, did not know, that a certain noble Duke, (mentioning the title of that illustrious individual,) came to his death by cutting a corn! I could not think of employing a man after that, to attend my family, who did not know, what, I believe, every old woman in the British Empire knows, as well as she does the name of her first sweetheart."

What reply could be made to a syllogism so convincing? Imitating Lord Burleigh, in THE CRITIC, but at an humble distance, we elevated our eyebrows, and looked, astonishment! The movement did not pass unnoticed. Our friend was enraptured. He translated the elevation of the eyebrows, in accordance with "a fore-gone conclusion," namely, that, as Dr. Dash did not know, that a certain Noble Duke had met his death from cutting a corn, therefore, he was unfit to be entrusted with the cure of disease; while our opinion was, that our friend————but we are dreaming. Having confessed thus much, our readers will not be surprised, that we reserve our views for a future occasion; but in doing so, it would be unjust not to admit, that we think Spurzheim's doctrine, borrowed however from Gall, is most in accordance with the discoveries of the greater number of modern physiologists.

Spurzheim taught, that "dreams are caused by certain isolated portions, or organs of the brain, continuing awake, while the remainder of it is in a temporary paralysis, from sleep;" and Carmichael, annotating

upon this passage, says, according to this view, the particular dream will be fashioned by the part, or parts, which are not under the dominion of sleep; and, the irrationality of our sleeping thoughts is accounted for, by one, or more parts, or organs, thus acting, without co-operation, or connexion, from the other parts of the encephalon.

We consider this, all circumstances taken into account, as correct and philosophical a definition, or rather explanation, of dreaming, as has been advanced by any writer, and consequently submit it, with confidence, to the judgment of the reader.

Somnambulism, is a more exalted activity of the brain, than simple dreaming; and is that condition of the body, in which some of the organs of the encephalon are unusually excited, while memory and consciousness are entirely suppressed. The sleep-walker has been known to rise from his bed, to dress himself almost fastidiously, perform his ordinary duties or avocations, traverse his house or grounds, enumerate his fold, examine his papers, and, seemingly conducted by an invisible agency, retire again to bed, totally unconscious of his movements. The student, has started from an unquiet slumber, to seize his pen, and in darkness and obscurity, at the midnight hour, to compose a thesis, or conclude a dissertation, which has surprised and delighted a hypercritical judge, or amused and enlivened a fastidious audience. Others, again, have solved problems, which, in their waking hours, defied their utmost endeavours; while a third class, in elegiac verse, have deplored a hopeless passion, or, in heroic measures, recorded a triumphant love. But, here, we merely allude to the phenomena, as,

in another part of this volume, we give a concise abbreviation of the histories, of various cases, which the observation of mankind has supplied, or the labour of physiologists has collected, for our instruction, our improvement, or amusement. And, to the inquiry into the arcana of the still more singular, but analogous condition of the cerebral and nervous systems which has been called ANIMAL MAGNETISM, THE MAGNETIC SLEEP, or, from its introducer, who seems to have acquired a first knowledge of the phenomena from a Jesuit, by the name of HELL, MESMERISM, we should have been desirous of extending our researches, recording our experience, and entering fully into the question; did the popular nature of this little volume permit. But, as neither the plan of this chapter, nor the space we have allotted ourself, admit of extension, the important nature of the subject warrant a hasty conclusion, or, the mysterious darkness, in which its phenomena are involved, license a casual and incidental notice, we prefer postponing the task, to some more convenient, or more fitting opportunity. We have no hesitation, however, in saying, that, to whatever agency the phenomena may be ascribed, from whatever source obtained, or, by whatever influence directed, whether by imagination, imitation, magnetic fluid, monotism, or collusion, one fact is clear, that they are startling, unexpected, overwhelming, and inexplicable. To conceive, that one human being is capable, by a mere act of volition, of rendering another, to a certain extent, invulnerable, or, at least, insensible to the stimuli of light, caloric, sound, punctures, and odours, however pungent, or offensive, or even deleterious; and that, by another act of volition, he shall restore him to the sense

of sight, feeling, and hearing, is so violent an effort, and the result so contrary to the general effect, which all these agents produce on the animal economy, that we are not surprised, that those who have never witnessed the experiments of Dr. Elliotson, or M. Lafontaine, should not only receive with reluctance, but should absolutely refuse to credit, the testimony of those, who are brought forward to attest them. We, therefore, candidly confess, that we shrink from the responsibility of an inquiry into phenomena, shrouded in so much mystery, and enveloped in so much awe; and conscious of our incapacity, withdraw from the performance of a task, which involves the ultimate revolution of the principles, which have hitherto directed the time-hallowed empire of reason, and compels the extrusion of data, upon which the philosophy of much of human knowledge has been founded.

But, if it be not permitted us to amplify and explain, it may be pardoned us, to quote a description of the phenomena, as publicly exhibited in London, last summer, by M. Lafontaine, in the person of a young Frenchman, who was the subject of his mesmeric operations. The source, from which the extract is taken, precludes all possibility of doubt, as to the truth of the statements, and, without any further remark, than, that we witnessed the phenomena ourself in silent wonder, not unmingled with incredulity, and can vouch for the correctness of the outline, and the fidelity of the detail characterizing the report, leave the reader, to form his own opinion, and draw his own conclusion, solemnly warning him, however, at the same time, to beware of that spirit of incredulity, which plunged Galileo into a dungeon, and that intolerance of science, which committed

Sir Humphry Davy, to the publication of a pamphlet, denying the possibility of lighting living London with a gaseous fluid! In both instances, truth was eclipsed, not extinguished. The theory of Galileo, though conceived in secrecy, and brought forth in shame, is cradled in reverence, and nurtured in honor; while the projection of Winsor, literally like the phœnix bursting from its ashes, survives, to illuminate our streets, and enliven our dreary, and almost hyperborean winter.

ANIMAL MAGNETISM.

During the winter, Paris was the theatre of many exhibitions of the arcane science of animal magnetism, and not always, it would seem, with harmless results; for on one occasion, we were informed, an English lady, in a somnambulant crisis, made certain disclosures, which were not a little startling to the company, she previously having passed, if not for a Roman, at least for a Parisian, Lucretia; and to none where these disclosures more astounding, than to her liege lord. After this unfortunate termination of an experiment, commenced in jest, mesmerism lost its attraction. The fair Parisians thought it too good a joke, to be made vehicles of their own scandal, and refused to patronize the professors of a science, which could use them as passive instruments to their own undoing. Prudence for once put fashion to the rout, and animal magnetism, driven from the saloons of Paris, has taken shelter in the rooms of Hanover Square. We are much tempted to plunge into the arcana of this eximious art, or science, but that time and space forbid; and, indeed, we could not substitute any facts, half so startling as those we witnessed

yesterday in the Hanover Square Rooms. Before, however, we enter upon the "res gestæ," it will be as well to describe the operator, M. Lafontaine himself. He is, we should say, about 40 years of age, about 5 feet 8 or 9, of rather austere, perhaps thoughtful cast of countenance; his hair dark, worn somewhat à la Brutus, and his beard, to borrow an expression from Dominie Sampson, "prodigious." So far then for the lecturer; we proceed with his experiments. About a quarter after 3, he made his appearance, on a raised stage at the end of one of the small rooms in the building. To get to this stage, he was compelled to pass through the entire crowd of visitors, and on ascending it, bowed to the company in a graceful manner. He then read from a paper in his hand, an account of the commission, which had been appointed, in Paris, to inquire into the merits of animal magnetism, and also enumerated the many diseases for the cure of which the science was applicable. The rapid manner, however, in which he read this paper, (which was in French,) prevented us from following him so closely as we could have wished. We understood him to say, that the reality of the science was established beyond the possibility of doubt, but we did not catch the names of any persons of scientific notoriety, who were on the commission, nor do we know, to which of the commissions he alluded. The reading of this document, which, as we before said, was at a railroad pace, did not occupy ten minutes; yet so impatient were some of the audience, that two gentlemen rose and left the room, a hint we trust M. Lafontaine will take, and, in future, deliver his preliminary observations in English; or, if he is unacquainted with our language,

let him get some one to read them for him. A youth now made his appearance, of a sallow olive complexion, but seemingly healthy, with dark hair and eyes, and rather good-looking. He was dressed in a black surtout, light white drill trousers, and boots, and we should think him about seventeen or eighteen years of age. He was then seated in an arm-chair, one of the common arm-chairs belonging to the rooms, and the mesmerismetic operations commenced. The operator took off his left-hand glove, drew a chair to the right of the youth, then placed his left thumb upon the apex of his (the youth's) right thumb, and two fingers on the fleshy part of the ball, and looked him steadily, and fixedly, in the face. It was about two or three minutes, before any visible effects were produced; though immediately as he commenced, a sort of spasmodic motion took place in the youth's throat, the symptoms indicating the presence of what medical writers have designated, "globus hystericus." Shortly after, the patient seemed lost to all consciousness, as, indeed, it was soon proved he was. But, in the sleep into which he had been thrown, the ordinary phenomena of sleep were not indicated. For example, his neck remained rigid, while his arms rested apparently flaccid at his sides, and no change could be detected in the features, except, perhaps, that his cheeks were a little more pallid, if this expression may be allowed, for it is not the word that expresses what we mean, than when he took his seat. The somnambulism being now complete, the operator, to our horror, drove several pins forcibly into his head and cheeks; but the somnambulist gave no indications of sensation. In fact, he seemed dead, and the interest excited in the room was expressed in

suppressed sighs. At this period, we confess, that we felt a little indignant at the supposed legerdemain, which was being practised; but, a very few moments convinced us of the injustice of our suspicions, and, we believe, every other person in the room. A vial of concentrated ammonia, commonly called hartshorn, was then opened by M. Lafontaine, and handed to the company to test its strength; and so powerful was it, that, no one could bear it, within six or eight inches of his nose, yet this was applied closely, in fact, affixed to the nostrils of the somnambulist, yet he gave no sign whatever of his suffering from it, and was decidedly unconscious of its presence! Next, some lucifer matches were lighted, and placed under his nose, the operator closing his mouth with his hand; but neither did these produce any effect. But, on M. Lafontaine partially unsomnambulizing him, he drew back his head, when the phial was held to his nose. Being again subjected to the magnetic influence, several percussion-caps were fired from a pistol, close to his ear, on both sides, and over the crown of his head, and at the occiput, and before his face, but he gave no start, or even moved a fibre. He was then partially awakened again, and started at the discharge of a percussion-cap. Being again manipulated, a perfect state of catalepsy was produced. His arms were extended horizontally from the shoulders, and his legs from the chair, and in this position, the electro-magnetic current, from a powerful machine, was made to pass through him, which shook him dreadfully, but he gave no signs of feeling. We forgot, in the hurry of description, to say, that previous to this experiment, having doubts of the catalepsis, we obtained leave to feel

the patient's pulse, but after a very careful examination, being determined to judge for ourself, we could not detect any pulsation whatever. The arm was rigid, and could not be bent. It resisted, like the bough of a tree, and, whether from fancy, agitation, or the magnetic fluid, we will not undertake to say which, we experienced a disagreeable sensation, which no words can express, and gladly, therefore, left the somnambulist for our seat. The somnambulist still in the chair, the company were invited to test the power of the electro-magnetic machine; but none seemed willing, at first, to subject themselves to its influence, till a gentleman, evidently from the country, if we might judge from his fine healthy looks, stepped forward and took the wires; but he had scarcely laid hold of them, ere he gave a shout, that we shall never forget as long as we live. He declared, that he was so overwhelmed with the shock, that he could not let go the wires, and therefore shouted. The patient was next subjected to the voltaic battery. From this, he seemed to suffer at first, but the operator, declaring he had not been sufficiently magnetized, renewed the fluid, when though the battery shook his arms like rattles, still he seemed quite unconscious of suffering. He was then blind-folded, and covered with a cloth, that he might not by any possibility see who approached him, and in this condition, several of the company thrust pins into his hands and thighs, but he remained insensible. He was then made to walk, leaning on the arm of a gentleman who volunteered to support him, when the operator, standing several yards distant, suddenly caused him to fall by a mere motion of the hand. This experiment, seemed to alarm the gentleman, on whose arm the som-

nambulist was leaning at the time he fell, and, indeed, it required all his exertions to keep his head from coming violently in contact with the floor, and, as it was, he saved him by the merest chance. When he was raised, which was done by the operator's seizing him by the collar, the right arm, which had been resting for support on the gentleman's arm, was elevated and rigid, as if still in the position it occupied while walking; while the left foot was raised in the act of stepping out. Being at length unmagnetized, the youth seemed perfectly in health, and declared that he did not recollect anything that had happened to him. We have forgotten to mention, that he was directed to sing during the period he was under magnetic influence, when he made a low moaning noise, coming as it were from the stomach, but which was arrested at will, by a single motion of the operator's hand.

Such, then, are the facts which we witnessed yesterday, and which we have given without exaggeration and without comment. All we will venture to say at the present moment is, that however the phenomenon may be explained, or attempted to be denied, there is one fact of which there can be no doubt, namely, the incredible power which the somnambulist possesses of resisting both voltaic electricity and the electro-galvanic influence. In this there could be, there was, no deception, and the fact, that after the lecture, a gentleman, to satisfy himself of the strength of the voltaic pile, took hold of the wires, and was so stunned by the blow that he actually pulled the machine off the table, must set this part of the question at rest. We refrain at present, from offering any further remarks, than that we were greatly

surprised at what we saw, and that the company, though not numerous, was fashionable and select, indeed remarkably so. (THE TIMES, JULY 20, 1841.)

FROM THE SAME PAPER.

The late experiments of M. Lafontaine, as reported in the "Times" of Tuesday, have induced us to throw together a few facts connected with this science, as we are convinced this is the proper time for inquiring into its truth or falsehood. We are not an imaginative people, though we are sometimes led away by fashion or the force of example, and therefore we require always some proof, that the pretensions of any man to any especial art, or science, should be set forth before proper and competent judges, and examined by them before we admit his claims. But, on the other hand, the moment some person of supposed knowledge of the subject annexes his IMPRIMATUR, we run into the opposite extreme. We will allow no cavil, no question, no argument upon the person's abilities. So-and-so has said it, and he ought to know, and therefore argument is out of the question. We could illustrate this proposition by a reference to Dr. Lardner's profound opinion, that steamers could not cross the Atlantic; or to the idea that prevailed, previous to the establishment of rail-roads, of a physical impediment to the traction of the wheels upon the rails, which led to the patent of Mr. Blenkinsop, for overcoming this supposed difficulty. Those who travel on rail-roads or in steam-vessels, at the present day, are apt to wonder how any doubts of the kind could have existed, but that they did exist we can adduce irrefragable proofs. Let us, therefore, now examine into the facts of

animal magnetism, or mesmerism, without any reference whatever to theory, or any appeal to reason. Certain effects are produced on certain individuals, by persons possessing a power, little short of the miraculous. Of this fact there can be no doubt. Nay, the effects are admitted, but they are ascribed to imagination, to sympathy, to nervous affection, or to some other cause, which leaves the solution exactly where the inquiry commenced. Entering the field neither as a partisan nor an adversary, we are only desirous of eliciting the truth. Either animal magnetism is, or it is not, an imposition. If it be an imposition, let us scout its professors from our shores; if not, let us calmly and dispassionately examine into its merits. A few remarks, therefore, upon the earlier history of the science, will enable us to come to a more decided opinion, as to whether the inquiry is worth the time that it must necessarily cost.

Mesmer, a native of Switzerland, from whose cognomen the science has been named, was the first person in Europe who attracted attention by the practice of the art. His exhibitions, however, were attended with a great deal of mummery, with the playing of musical instruments, and the manipulation of iron spindles, issuing from a wooden circular box. This box, or tub, admitted around it about 50 patients, and each patient was connected to his neighbour by a cord, while to render the chain of communication more complete, the one pinched the other's thumb. This new science produced so much sensation in Paris, that the government appointed a commission to inquire into its merits, at the head of which was the celebrated Benjamin Franklin. The report was unfavourable to the pretensions of the new science; but it is

worthy of remark, that Mesmer himself never came in contact with the commissioners; he refused to explain the principles by which he operated, but one of his pupils, Deslon, undertook to explain everything, but, as we have said, not to the satisfaction of the commission. Nevertheless, they admit that five out of fourteen sick persons experienced some effects from the operation, but attribute these effects to the influence of imagination. But, as we can only judge from effects, and, allowing that Mesmerism works only through the medium of the imagination, still, are not the principles, which govern so tremendous an agency, worthy of being inquired into? Any objections urged either from analogy, from reason, or from experience, can scarcely be entertained. At first sight, who would suppose, that the combination of certain plates of metal, immersed in diluted acid, would produce the extraordinary effects which we can see daily demonstrated, either by the electro-galvanic battery or the voltaic pile? Or, that the union and combustion of two gases should produce so great a heat as to consume iron, and reduce the diamond to its primitive elements? Or, that Hall's hydraulic machine should overcome the laws of gravitation, and raise water in spite of its physical properties, simply by rapidity of motion? Or, that the violet ray of the prism should magnetize iron? Yet these are facts which no one ventures to question, because they are daily demonstrated. Or, shall we make any allusion to the daguerrotype, the electrotype, or the wonderful powers of steam, with its strange faculty of electricity? Why, therefore, without inquiry, should we refuse to an individual the credit of possessing latent powers which are not common to all our race? All fish have not the pro-

perty of the gymnotus—yet who doubts the power of the eel in the Adelaide Gallery* to produce electrical phenomena? We could multiply cases of extraordinary qualities, possessed not only by animals, but by men. Does any one doubt the venom of the rattle-snake, of the cobra de capella, or of that horrid reptile, common near the mines of Choco, in South America, whose bite is instantaneous and frightful dissolution, when the body swells, and the whole frame in a few seconds is decomposed, and becomes a fluid mass of loathsome corruption? Or, does any one question the extraordinary faculty which that individual, pensioned at the Mauritius by the British Government, possesses, of seeing vessels some hundred miles at sea? Or, the fact of the Brahmin who could sit on air? Or, of another Indian, who could bury himself for a month, as witnessed by Lieutenant Boileau, and then resuscitate himself? Or, of the case of Colonel Townshend, noticed by Cheyne, who could voluntarily expire, and again return to life? The power of the hazel-twig, in the hands of certain persons, to point out the source of springs, was long treated as fictitious; but in the twenty-second volume of the "QUARTERLY REVIEW" there is a well authenticated case of Lady N.'s exhibiting this power, in the presence of Dr. Hutton and others, in a field near the new college at Woolwich, and subsequently at other places. It would be an endless task, to enumerate the frequent divergence from the ordinary laws of the human economy, in persons of peculiar idiosyncrasies, but we shall merely notice, in passing, the fact of Chabert swallowing eleven grains of phosphorus, and, we

* The eel died since this was written.

forget how many, of arsenic, with impunity—a circumstance which, in a great measure, corroborates the statement of the Roman historian, that Mithridates was insensible to poison, while it brings to mind, the anecdote of the ancient dame who had lived so long on poison, that none could approach her bed without destruction. (See the notes to Grey's HUDIBRAS.)

Now, we ask, is there anything more wonderful in Mesmerism than in the facts we have enumerated? We think not. But, we are not insisting on the truth of the doctrines of Mesmer; all we contend for is an impartial inquiry into their merits.

We set aside, entirely, several of the experiments made by M. Lafontaine, on Monday last, such as the application of the ammonia to the nostrils, the firing of the pistols, and the pins plunged into the flesh of the somnambulist; because Phineas Adams, a soldier in the Somerset Militia, in the year 1811, in a fit of malingering,* actually submitted to as severe tests without a murmur—nay, to severer tests, for his scalp was removed, and the skull scraped without his giving sign of sensibility; yet, on procuring his discharge, in two days after he was seen at work—(for this case see Beck's MED. JURIS., or 4th vol. part 2, p. 159, of the EDINBURGH ANN. REG.);—but we cannot set aside the fact that the somnambulist submitted, without a murmur, to the action of the voltaic pile, and the electro-magnetic current, without evincing any signs of pain or suffering. It is upon this point that we say inquiry is called for. If it be a cheat, it is a magnificent one, and in proportion to the magni-

* We are of opinion, as will be seen presently, that this was a case of abnormal sleep, and not malingering.

tude of the deception should the punishment be meted. Let the inquiry be undertaken by proper persons, by men who are acquainted with the wonders of physical science, and not by pseudo-medical reformers and political practitioners, and let their decision be final. The time has arrived when no pretensions to science, however apparently wild or visionary, can be treated with contempt. (THE TIMES, 24th July, 1841.)

The following additional confirmation is from a rising medical publication :—

MESMERISM.

On Wednesday, the 6th instant, we attended a SEANCE MESMERIQUE given by Dr. Elliotson, at his house in Conduit-street. We noticed among those present, several noblemen, public characters, and gentlemen, former pupils of the doctor's at University College, now in practice, and ladies.

At a quarter before four, a girl, aged 16, of delicate proportions and rather prepossessing appearance, was introduced, and was described by the doctor as a patient who was placed under his care about eight months since. She was then subject to most violent epileptic fits, which had recurred at very short intervals for eight years. Conceiving her to be a fit subject for the mesmeric influence, he essayed, and succeeded the very first time, in throwing her into the usual artificial sleep, though she utterly disbelieved in the power of mesmerism. Since that time she had had but two returns of the fits; one of these occurred at a period of great excitement, when the process had been suspended for seven weeks on account of his absence on the continent; the other, when, from acci-

dental circumstances, it was performed but once in a period of three weeks. The girl being placed in a chair à la Voltaire, her sister sitting near her, Dr. Elliotson directed the points of his fingers towards her eyes without moving them. In about fifteen minutes she suddenly fell back asleep. The first circumstance that struck us was the pliant limber state of the girl's arms, legs, indeed of her whole person. She could support no part of her frame. Great as seemed, however, the universal nervous debility, strength was given by making passes over each respective part. If the arms were lifted by the sleeve, they dropped as soon as they were unsupported, but if passes were made over and along them, they remained up. She could not stand, and when raised required full support: but passes downward before and behind her, from her head to her feet, gradually enabled her to require less support, till at length she stood firmly for a short time, when the temporary power being expended, she fell. Any one in the room produced the same effect on the patient.

By waving his fingers in a curling course inside her hand and arm, the extremity was all bent inwards, and no one in the room could force it back; she was lifted out of the chair by several, merely suspended by her bent forearm; but a few waves outside the arm, in the opposite direction, instantly produced complete relaxation of the whole limb. A number of smaller phenomena, which Dr. Elliotson considered as peculiar to this case, were now exhibited. A movement of the manipulator's finger drew her lip either upwards or downwards; the resemblance of a slight smile was caused by drawing out an angle of the mouth; and again, by separating his

hands before her mouth in opposite directions, the learned manipulator made the mouth gradually open till she inspired deeply and yawned. The eyelids also opened in obedience to the operator's fingers, and the eyes were seen converging towards the nose, and were moved to the right and left with the utmost rapidity, in accordance with the movements of the finger. There was a remarkable tendency in the subject to follow any movement of the doctor; her hands or feet slowly and with some apparent difficulty rose or moved sideways, precisely according to the direction shown by his hand, though the muscular power seemed too weak to allow this to be done without effort, or to continue. By motion of the manipulator's hand, her arms could be brought into contact or forced asunder so firmly, that no one in the room (without a violence that he would be loath to use) could alter this position. A gentleman who was present from our office, endeavoured, when the girl's hands were closed, to prevent them from separating in obedience to the operator's passes, and he declares that he exerted his utmost force without succeeding in keeping her hands closed together. After repeated essays, by calling very loudly in her ears, she showed that she possessed the auditory faculty by answering incoherently the questions of the doctor (whom she mistook throughout for her sister), by referring to some little family transactions that took place the day before, and expressing great impatience at Dr. Elliotson's repeated solicitations for a song. After much difficulty she at length complied, and sung a ballad in a rather sweet voice, breaking off, however, in the middle with an impatient expression, "How tiresome you are! There, I forget it." After some minutes she resumed and

finished the song, but her head fell to one side in deep sleep. She was then left in her sleep for a quarter of an hour, when she awoke suddenly of her own accord. The doctor acknowledged that he had himself no power of waking her. We heard a number of gentlemen, who entered the room incredulous, admit they were obliged to believe what without seeing no power on earth could have compelled them to believe. Our readers, we suppose, must be indulged by those present with the same license which we, in common with these gentlemen, would have desired for ourselves if absent. Such startling facts are not easily believed; yet what, after all, are they but (with few slight modifications) the common state of somnambulism, ARTIFICIALLY superinduced? T. P. H. (MEDICAL TIMES, NO. 136, VOL. VI., APRIL 30, 1842.)

CHAPTER V.

DROWSINESS.—NATURAL TO CERTAIN CONSTITUTIONS.—DR. JOHNSON. — THOMPSON. — LORD HAILES. — PROLONGED SLEEP.—MARY LYALL.—THE LADY OF NISMES.—ELIZABETH ORVIN.—ELIZABETH PERKINS.—SAMUEL CHILTON.—PHINEAS ADAMS.—CASES BY DR. ELLIOTSON.—MR. JOHN BELL.—HIPPOCRATES.—WILLIS.—DR. ABERCROMBIE.—WEPPER.—NARCOTICS SOMETIMES PRODUCE PROLONGED SLEEP.—CASE OF A CHILD NEAR LYMINGTON.—QUANTITY OF MORPHIA EXHIBITED TO A PATIENT.—ALCOHOL.—ITS EFFECTS.—EXTRAORDINARY CASE BY NAUDER.—CASE BY THE AUTHOR.—TRANCE.—DEFINITION.—MANY PERSONS ANNUALLY BURIED ALIVE.—THE AUTHOR'S OPINION ON THE SUBJECT.—LAW OF ATHENS ON PREMATURE INTERMENT.—IN GENEVA, HOLLAND, AND ENGLAND.—ZIMMERMAN RESTORES A CRIMINAL TO LIFE.—EMPEDOCLES.—PLINY.—AULIUS AVIOLA BURNED IN A TRANCE.—THE PRÆTOR LAMIA MET WITH THE SAME FATE.—TUBERO RESCUED BY HIS FRIENDS FROM THE FUNERAL PYRE.—ASCLEPIADES.—COLINET OF DIJON.—RECOVERY OF A BOY AT THE HOSPITAL OF CASSEL ABOUT TO BE BURIED ALIVE.—LAUGHABLE ACCOUNT BY TAYLOR.—CARDINAL ESPINOLA.—VESALIUS.—THE ABBE PREVOST.—SINGULAR MISFORTUNES OF FRANCIS CIVILE.—SIR GERVASE SCROOP.—ERUS ARMINIUS.—LADY FANSHAWE.—LADY RUSSELL.—CURIOUS FACT CONNECTED WITH RESUSCITATION OF A LADY IN PARIS.—HORRIBLE CASE OF PREMATURE INTERMENT IN RUSSIA.—MRS. GEORGE ANNE BELLAMY.—M. THIERS.—MRS. GODFREY, SISTER TO THE GREAT DUKE OF MARLBOROUGH.—DR. WALKER BURIED ALIVE.—DESTINY OF THE GREEKS.—JOHNSON.—FRANKLIN.—BEAUMONT.—RETCHMUTH ADOLPH.—CASE OF THE GIRL SHORIGNY.—LEANING, A CHINESE SLAVE.—CASE FROM THE PSYCHOLOGICAL MAGAZINE.—CASE OF A GENTLEMAN IN JAMAICA SAVED FROM PREMATURE INTERMENT.—SIMILAR CASE IN DOMINICA.

A VERY ordinary inactivity of the cerebral organs, afflicting the inhabitants of great towns, and persons who

have short necks with pendulous abdomens, whether they live in town or country, is DROWSINESS, a condition of the brain approaching to coma, or the apoplectic phase of sleep. It is common to persons of obtuse intellects, cold temperaments, reserved habits, corpulent bodies, and great appetites; in short, in the diatheses of those in whose bodies exist a redundancy of carbon, or, more properly speaking, whose systems are unable to consume the disproportionate quantity which they throw into it in the form of food. These people are generally dull heavy, and stupid: indifferent neighbours, and uninteresting companions. Having awakened but to eat, they eat but to sleep; and pass their lives, as Sallust remarked long since, more like the beasts of the field than the lords of the earth. In the middle-aged, and those who undergo no unusual fatigue, who pass their lives in one unenvied round of eating, drinking, and sleeping, or whose migrations, according to Goldsmith, "are only from the blue bed to the brown," a tendency so prejudicial to health, and a practice so disagreeable to friends, notwithstanding the high opinion of Abernethy, that every man should sleep after his dinner, should be checked by every means and every effort that may conduce to a more lively and sprightly condition of the brain. This desirable result, may be in part, if not entirely, secured, by light diet, abstinence from wine, spirits, and porter, and removal to an airy and cheerful room, or slight exercise in a garden, immediately after dinner. When it occurs in persons passed the prime of life, in weakly habits, or to invalids, it is not then so much a disease, as the necessary consequence of the decidence or decay of the vital powers. Mrs. Mathews, in the life of her husband, Charles

Mathews, the comedian, particularly mentions the drowsiness which used to attack him, in his latter days, whenever he sat down to write or to read. Had that inimitable mimic but consulted his medical attendant in time, it is probable he might have lived some years longer, as in him it was a strong symptom of the failure of life.

But though drowsiness is generally indicative of slothful intellect, yet it is not always invariably characteristic of obtuse mind. Dr. Johnson complained of his tendency to somnolency and sloth. Thompson, the author of the SEASONS, passed a great portion of his time in bed; and Macnish informs us, that the late Lord Hailes, when composing his ANNALS OF SCOTLAND, made use of a wheel-chair in his study, through which he was occasionally rapidly driven by a servant, to dispel the strong disposition to slumber, which seemed an inherent part of his natural constitution. In church, it was customary to give him sweetmeats, which he crunched during the sermon, to keep himself awake!

From drowsiness we insensibly pass to PROLONGED SLEEP, an abnormal condition of the cerebral organs, which differs materially from TRANCE in not being characterized by coldness, absence of respiration, pallor, or any of those symptoms of remission, so frequently taken for cessation of vitality.

In cases of prolonged sleep, we know that it is sleep that is present, and never think of burying the person; but in cases of trance, we are too often deceived, and the living body is treated as a corpse.

A great number of cases of this affection are recorded in the works of medical writers, but we shall select but a

few, as they all present, with very trifling exceptions, very similar phenomena. In the case of Mary Lyall, related in the Eighth Volume of the TRANSACTIONS OF THE ROYAL SOCIETY OF EDINBURGH, we are told, that she fell asleep on the twenty-seventh of June, and continued sleeping until the thirtieth of that month, when she awoke. On the first of July she again fell asleep, and slept till the eighth of August. For the purpose of rousing her, venesection, blisters, and the warm bath were employed, but without effect. For the first seven days, she discovered no signs of motion, and expressed no desire for food. At the end of this period, she began to move her left hand, and pointing to her mouth, signified a desire for food. She took what was given to her, but exhibited no signs of hearing, nor moved any other part of her body but the left hand. Her right arm and leg appeared completely paralyzed, and, even when punctured so as to draw blood, evinced no sense of pain; though if the left arm were touched, it was immediately retracted. During the two first weeks, she took food whenever offered her. Her pulse was, at this time, about fifty; on the third and fourth week, it was sixty; but the day before she recovered, it rose to seventy-two. Respiration was observed to be easy and nearly imperceptible during the day, but at night she occasionally breathed strongly, like a person who has just fallen asleep. Hearing did not return till four days after recovery, and she remembered nothing that passed, or that she had taken food.

A more curious case, is that of the Lady of Nismes, recorded in the MEMOIRS OF THE ROYAL ACADEMY OF SCIENCES, published at Berlin in 1777. Her attacks

of sleep took place periodically, at sunrise, and at noon. The first continued till within a short time of the accession of the second, and the second continued till within seven and eight in the evening, when she awoke and continued so until the next morning. Her sleep was remarkably profound, and, during the very brief intervals of wakefulness, she hurriedly swallowed small quantities of broth, which was kept ready prepared for her. When the somnolency had continued for six months, it left her suddenly for six months, and then attacked her again, leaving another interval of six months. When it had lasted a year, the interval between its approach and departure was one twelvemonth. At length the disease disappeared all together, and she lived to the age of eighty-one, and died at last of dropsy.

Elizabeth Orvin, as related by Macuish and Dr. Elliotson, passed three fourths of her time in sleep. A woman in Hainault, slept seventeen or eighteen hours a day, for fifteen years. Another woman slept forty days. Elizabeth Perkins, in 1788, fell into a deep sleep, from which nothing could rouse her; but at the end of eleven days she awoke spontaneously, and went about her business as usual. In a week after she fell asleep again, and remained so for many days, dozing on, with occasional intervals of waking, for several months, when she died. Dr. Oliver mentions the case of one Samuel Chilton, of Finsbury, near Bath, twenty-five years of age, who once slept for a month. In two years, he slept again for seventeen days, at the beginning of which period he took food, but at length his jaws fixed, and he could no longer eat. When he fell asleep the barley was sowing, and when he awoke he could hardly believe it ripe, though he

saw it reaping. At the end of a year, he fell into another sleep. During this period, he was subjected to some very cruel experiments, which we deem at all times, and under allcircumstances, unjustifiable. For example, pins were thrust under his finger-nails, till the blood came; he was pinched, and bled, and we believe cupped—for we are now quoting from memory—while hartshorn, and other stimulant and escharotic sternutatories, were applied to his nostrils, but he neither moved nor spoke, nor gave any sign of suffering.

The case of Phineas Adams, a private in the Somersetshire militia, is analogous to this of Clinton, though it was treated as one of malingering, with the most refined brutality, and a science of torture, worthy the genius of Cæsar Borgia himself; for, not only was the unfortunate wretch, blistered, bled, punctured, and drenched with drastic purges, but pins were thrust under his finger-nails, and to complete the process of the surgical inquisitor, the scalp was divided, dissected off, and the skull scraped with a scalpel! Then, and then only, says the account, one groan escaped him.

Beck, in his MEDICAL JURISPRUDENCE, takes it for granted that it was a case of malingering. We are sorry to differ from so good an authority; but we cannot avoid thinking that it was simply a case of abnormal sleep, or mesmeric somnambulism. Dr. Elliotson mentions, that he knew a young lady, who slept for six weeks, and recovered, and a twin sister who slept for a month. He adds, "but, whether from not being well supplied with nourishment and warmth, I cannot say, she died before I saw her (the latter) and, on inspection, nothing but inanition and bloodlessness was found."

A man mentioned by Mr. John Bell, who had been accustomed to a life of much activity, was precluded from his usual employment by an extensive fistula, which he had concealed. Being of a full habit, and his appetite unimpaired, he sank into a state of complete lethargy, nearly his whole time being spent in sleep. When roused, he attempted to answer questions, but his answers were incoherent and his speech inarticulate. From this state however he recovered. (Dr. Abercrombie, DISEASES OF THE BRAIN.) Hippocrates mentions a priest, subject to annual fits of the gout, in whom the paroxysm terminated regularly for some years in a state of lethargy, from which he could only be roused to take food or drink." This state continued one or two weeks. A man mentioned by Willis, at the crisis of a putrid fever, lay for four days in a state of profound sleep, from which nothing could rouse him. He recovered from this after blistering, but could remember nothing for two months, when he gradually recovered. Some years ago, says Dr. Abercrombie, I saw a young man, who, at the end of a tedious fever, fell into such a degree of stupor, that I apprehended effusion of the brain. He recovered however after a good many days, and his bodily health was soon restored; but his mind was in a state approaching to idiotism. In this condition he was taken to the country, and recovered gradually after several months. A gentleman, mentioned by Wepfer, was seized with hemiplegia of the right side and profound sleep; on the second day, the right side was convulsed, and after this the palsy disappeared; he then lay in a state of sleep for nine days, having during seven of these been incapable of taking any food. On the eighth day, he began to take what was offered

him, and, on the ninth, came out of the state of stupor; but his faculties were gone, he knew nobody, and neither remembered nor attended to anything. After several weeks, he began to know his more particular friends, then to remember words, to repeat the Lord's prayer, and to read a few words of Latin, rather than German, which was his own language, but only a few words at a time. If he was urged to read more, he said he had formerly understood those things, but now did not. He could write, however, and frequently wrote, lines both of German and Latin words, in elegant characters, but without meaning. After some time, he began to pay more attention to what was passing around him, and to look after his household affairs. He often lamented his want of understanding, and expressed his hope that he should recover it. While thus making slight and gradual progress, he was after three or four months, cut off by an attack of apoplexy.

Narcotics, and alcohol, sometimes produce similar effects. Macnish relates the case of a child near Lymington, that, from an overdose of laudanum, slept three weeks. We have a brother, who, when an infant, slept a great many hours from the same cause; and, on one occasion, having ourself prescribed morphia for a lady labouring under neuralgia of the face, the effects were so successful and pleasing, that some time after her mother, who was an elderly woman, having a pain in her face, also took one of the remaining pills, which contained a grain of the acetate, and the consequence was, that she slept eight-and-thirty hours, but awoke in health and even spirits. Yet on another occasion, to a patient, who had blown himself up with gunpowder, while awkwardly attempting

to blast rocks, we exhibited (having begun however with a minute dose) eight grains, every eight hours, with the most beneficial results. There is a case, recently mentioned in a medical periodical, of a lady, who takes six grains, twice or thrice a day, without any bad effects. Dr. Elliotson, on the other hand, says, "I have seen a person destroyed by a single dose of a third of a grain of morphia; and two or three from a grain, although they had recently taken doses of half a grain, and even a grain, with little effect." The same able physician has seen a grain taken every hour for forty-eight hours, without producing any effect.

Alcohol sometimes induces very prolonged sleep, as in the following case, preserved by Dr. Nauder, a Swedish physician. He tells us that on the third of March, 1756, a peasant, about sixty years of age, of the Province of Scheeren, having got deeply intoxicated with brandy, was thrown down by the violence of the wind on his way home; and, as he was unable to rise, he fell asleep where he lay. He was not discovered till the next morning, when he was found quite rigid and to all appearance dead. He was therefore put into a shell preparatory to interment. It happened fortunately, before the interment took place, that the author of the report, a physician of Gothland, being on a journey, arrived at the spot where the body lay. Being told of what had occurred, he was induced to examine it, and found the face and extremities of an icy coldness, and the cheeks of an extraordinary red color. The joints were immoveable, and the eyes fixed. Not the least action of the heart, or pulse, or any sign of respiration, could be perceived; and the feet were so completely frozen, that the toes had

become black, except the great toe on the right foot. Having contemplated these unfavorable symptoms for some time, Dr. Nauder fancied he could perceive some warmth at the pit of the stomach, which encouraged him to hope that the poor creature might be recovered; but, as there was no apothecary, or medicines of any kind, to be procured near the spot, he was induced to try the following means. He began by directing the arms, legs, and loins, to be rubbed with coarse woollen, and applied to the stomach and abdomen, warm cloths of the same material, which were frequently changed and their warmth gradually increased. The patient, during the application of these remedies, was laid on a mattress on the floor, and no attention paid to his feet, because the doctor had very naturally concluded, that it was impossible to save them; but reflecting on the custom of putting frozen meat into cold water, in order to thaw it, he determined to try that method in this instance. But, as the joints were inflexible, he could not immerse them in water, and therefore adopted the plan of applying round them wet linen cloths, which were frequently changed. In the meanwhile, the friction had produced its wonted effects, and the regions around the heart began to recover warmth; but, it was not until after four hours, constant rubbing, that any symptoms of returning respiration manifested themselves. This was about two o'clock in the afternoon. No pulse was felt however until near half an hour after three, when the muscles began to lose their rigidity, and the jaws to relax, and, before five, a silver spoon was got between his teeth, which enabled them, with much difficulty, however, to make him swallow some warm wine, after which, his

cheeks were suffused with perspiration, and began to return to their natural color. Shortly after, he began to move his eyebrows, and at six o'clock he stretched his arms and legs. He was now placed in his bed before a good fire, and the extremities well covered with warm blankets. Two more spoonfuls of hot wine were exhibited, and about eight o'clock he began first to talk, but in a confused and unintelligible manner, believing himself still in the frost. By degrees the cold had almost left his feet, and the blackness of the toes in a great measure disappeared, although flexibility to the joints were not yet restored. About ten o'clock, however, he began to bend his back, and complained of violent pain in the legs. He was then made to take a little hot beer with an egg beat in it, and soon after went to sleep. In the morning his feet were warm, and without pain; his toes had recovered their natural color, but both were extremely tender. His thirst was very great, and his pulse quick and strong, which Dr. Nauder thought indicated venesection, but, as a lancet could not be procured, he was ordered to drink plentifully of water-gruel, at intervals, till noon, when his bowels were relieved. He went to sleep again in the evening, and next morning was able to sit up, and was removed in a chaise, not entirely free from pain, but in a fair way of a perfect and speedy recovery, which expectations we believe were realized.

A case not dissimilar to this, though happening in a very different climate, and consequently very differently treated, occurred in our practice in Jamaica. A person, by the name of Smithson, who had been an overseer on a sugar-estate, but had retired from active duties to a

little place of his own, or, as it is significantly termed in Jamaica, "a Mountain," was attacked by a fit, which in some respects resembled apoplexy, but in its results might be termed epileptic. We do not remember if he was a hard drinker, but there is little doubt, that he had been drinking a great deal previous to the attack. As he lived some three or four miles from the town of Lucea, the person who was sent for his medical attendant, was some time in getting to his house, and when he did get there, the practitioner having gone in another direction, the boy proceeded to this gentleman's partner, who lived seven or eight miles from the town, but was also unsuccessful in finding him at home. He therefore returned back saying he could not find the doctor. By this time it was night, and no further attempts were made to procure a surgeon, the patient's attendants naturally concluding, that as an express had been sent to the surgery, and to the doctor's private house, that one or other of the partners would arrive early in the morning, or at least that the assistant would attend. However, this did not happen, and Smithson still continuing insensible, these wretched people, wearied of waiting, sent off another express at noon for the same parties, but again were they fated to be disappointed. Thus a day, a night, and a day again, passed away, the poor creature still alive, though perfectly insensible, when they determined to send for us, which was now the third day since the attack; but, as if they were destined to be tried to the utmost, we had left home having been called up about twelve at night, to proceed several miles in the country, to attend a gentleman who had broken his arm, and had actually passed within a very short distance of this poor man's house. The messenger however

followed, and fortunately met us returning home, about half past eleven A. M. Having heard the account we have given, being very much fatigued from night-watching, and a hot ride, and taking into consideration the nature of the case, we deemed it a work of supererogation to visit the patient, being satisfied that he was by that time dead. However, more to satisfy the messenger than with any hopes of being useful, we turned our horse's head and followed him. In a quarter of an hour or twenty minutes, for we went at a hand-gallop, we arrived at the house, and without any ceremony were shown into the sick room.

The patient was a thin tall man, about fifty years of age, with a sharp expression of features. A little froth exuded from his lips; his countenance was pale rather than florid; his eyes closed; and the arteries and veins of his forehead were swollen, and stood out in bold relief, but seemed to have no pulsation. On opening the eyelids, the pupils were found to be unusually dilated, and the conjunctiva injected with blood. Conceiving very little hope of his recovery, under such circumstances, but determined to give him a chance, we opened the temporal artery on the left side, when the blood spirted to the ceiling. As instant and copious depletion, appeared to us the only remedial means that were indicated, we next opened the right artery, and then the veins in both the arms. It was remarkable, that, notwithstanding the coma which had been present now for the third day, and the imperfect manner in which respiration had been performed, that the arterial and venous blood still preserved their marked difference in color, though both were of rather a darker hue than usual. We cannot pretend to estimate the quantity of blood lost, but it must

have been considerable, certainly not less than from two to three pounds, when he made a motion with his lips, and moved one of his legs. A little water was then given him, which was swallowed with difficulty. The veins and arteries on the forehead now began to sink, and we deemed it necessary therefore to check the bleeding by binding up the temples, still allowing the arms however to bleed. After a few more ounces were lost, and a perspiration beginning to break out upon his forehead, we bound up the arms also, and directing a saline draught to be given, and certain other remedial measures to be pursued, we left him about half-past one, but not before he was sensible, though he did not speak. We had intended to visit him the next day, but was prevented, from the great number of fever cases then in the military hospital, of which we had charge. The day after, we received a message to say, that there was no necessity for visiting him, as, though weak, he was able to go about the house. In a week after, to our infinite surprise, he rode into the town of Lucca, and continued, up to the time of our leaving that part of the country, in good health.

Trance may be considered the next step from those cases which we have been considering; and has been thus happily described. It is one of the most singular affections to which the body is subject. During its continuance, the whole frame is cold, rigid, and inflexible, the countenance without color, the eye fixed and motionless, while breathing, and the pulsation of the heart, are, to all appearance, at an end. The mental powers, also, are generally superseded, and participate in the universal torpor which pervades the frame. In this extraordinary condition the person may remain for

many days, having all, or nearly all, the characteristics of death impressed upon him. Such was the case with the celebrated Lady Russell, who only escaped premature interment, by the affectionate prudence of her husband. (MACNISH.) It sometimes happens, as the author above quoted very justly remarks, that universal torpor pervades the brain, and that total unconsciousness is the predominant symptom; but at others, and perhaps more frequently than the generality of persons suppose, consciousness is present, though volition, or the power to call the voluntary muscles into action, is in abeyance. The wretched being sees and knows the objects and the persons about him, hears the remarks they make, and observes the preparations for his funeral; but, horrible to relate, finds himself unable to communicate his feelings, or to make known the condition of his body. There can be no doubt, but, that in this most dreadful state, thousands even at the present day, are annually consigned to an unhallowed tomb, in all parts of the world, but especially in India, where the superstitious rites of the Hindoo religion, enjoin the exposure of the dying and the dead on the banks of the Ganges, with the stuffing of their mouth and nostrils with its sacred mud!

Impressed with this idea, so far back as the year 1828-9, in consequence of having read of a recent case in France, in which an infant, after having lain more than six-and-thirty hours on the dissecting table, was found to be alive when about to be dissected, we wrote, and published in the SCOTS' MAGAZINE, then printed in Edinburgh, a paper entitled, ON THE PROBABILITY THAT MANY PERSONS ARE BURIED ALIVE. In this article, with great labour

and patience, for we were then a novice in book-making, we collected numerous cases of hasty interment, not at that time being aware, that the subject had been more fully and more ably treated by Mr. Taylor, in his DANGER OF PREMATURE INTERMENT. From that paper, then, and Mr. Taylor's little volume, we shall draw many of the cases which follow; presupposing that our readers fully understand the meaning of the word TRANCE, and therefore relieving ourself of the difficult task of further defining that singular phenomenon. A few words, however, on the precautions which have been taken by the ancients and the moderns, to prevent the possibility of premature interment, may be interesting, or, at any rate, will prepare the reader for what follows.

At Athens, the law required, that no person should be buried till the third day, and, in the greater number of the cities of Greece, a funeral did not take place till the sixth or seventh. The body of Hephæstion, which Alexander honored with such magnificient obsequies, was not burned until the tenth day. The Romans, though indifferent to their dead in the infancy of their civilization, were careful to avoid premature interment in latter times, and proper officers were appointed to visit the dead, to discover if life was really extinct, or animation only suspended. On the fourth day, the body was exposed in the vestibule of the house, and, on the eighth, the funeral rites were performed. At Geneva, persons are appointed to inspect all dead bodies, and they are not buried until the third day. In Holland, they carry their precautions much farther, and delay their funerals for a longer time after death. In England, says Taylor, with some asperity, the breath scarcely leaves

the body when all respect for it ceases. It is viewed with horror. It is abandoned to a set of mercenary people, who begin by dragging it from a warm bed, to place it on some cold straw. Soon after, devotion, or the desire of gain, draws together the undertakers, who first cover the head and face, with a kind of cap in the shape of a bag. Sometimes, they put cotton into the mouth, the ears, and other parts of the body, if the last precaution has not been taken before their arrival. This cotton is placed there, to prevent the body from soiling the linen in which it is wrapped up. They then bind the breast and arms round with a bandage, and make another pass round the lower part of the belly; the latter comprehends the arms from the elbows, and serves also to enclose the feet. After this, the undertaker wraps up the whole body in a sheet, which they fix at both extremities, and either sew or fasten it, with pins, observing, always, to confine the body as closely as they can. It is thus that a man is prepared for his coffin; but it would be difficult to pursue a more pernicious method, even if one had an intention of accelerating death, or of rendering it impossible for a person to return to life.

Mr. Taylor, though harsh in his strictures, is nevertheless right in the main, for this hasty, or unnatural, conduct towards the dead, as will be seen, from the numerous cases we shall cite, has been frequently productive of the most painful consequences. We are too apt to suppose a person dead, because he ceases to breathe, often only in appearance. Even the symptoms usually considered as proofs of death, are not always to be relied on. Zimmerman restored a criminal to life, whose body was cold, cadaverous, and of a yellow hue. He had fainted

through excess of fear, and was dragged, shaken, and pulled about, without rousing; but at the end of twenty-four hours he was restored to life by hartshorn. Great precaution should be observed therefore, where any doubt of death exists, as the following examples will show.

Commencing from the earliest periods, we find that premature interment was common among the ancient Greeks; for we are told that Empedocles rescued from death, Ponthia, a woman of Agrigentum, who was about to be buried as one that was dead. The same practice obtained among the early Romans. Pliny tells us, that Aulius Aviola, having fallen into a trance, was supposed to be dead. Preparations were made and concluded for the obsequies; he was carried to the funeral pile, and the fire lighted; though he was all the time conscious, but unable to move or speak. At length, the agony of anticipated death, or perhaps the acute pain of burning, broke the spell in which the voluntary organs were bound, and he called aloud to those around the pile. But alas! it was too late to save him, the flames had taken uncontrollable possession of the inflammable pyre, which, fed by the oils and spices copiously heaped upon it, blazed with great fury; and thus the temporary disenchainment of his voice served only to inform his friends that they had burned him alive! The prætor Lamio met with the same fate: but Tubero, who had been also prætor, was more fortunate; he alarmed his friends, just in time for them to rescue him from the greedy flames.

A remarkable anecdote is told of Asclepiades: returning from his country seat towards Rome, he observed a crowd of persons near the walls, assembled round a funeral pile. From motives of curiosity he approached

the pile, and looking at the body, the face of which was always exposed at Roman funerals, he thought he could perceive signs of life, and directed the flames to be extinguished. A murmur immediately arose among the crowd, many inclining to place faith in the opinion of the physician, but the greater portion ridiculing both him and his art. However, he prevailed on the relatives to defer the incremation, and the consequence was the restoration to life of the supposed dead person.

A friend, who was desirous of viewing, for the last time, the body of a director of the Conch House at Dijon, named Colinet, just before the funeral set out, went into the room; and perceiving, as he thought, the presence of sensibility about the muscles of the face, proposed that attempts should be made to restore him. His advice was followed, and the man recovered and lived many years after. In the annals of the Hospital of Cassel, the record is preserved of a boy, who, being supposed dead, was carried into the dead-room. Recovering, however, from his trance, and recollecting where he was, he crawled towards the door, and knocked with his foot against it. The noise was heard by the sentry, who calling for assistance, he was removed to a warm bed, and eventually recovered.

A rather laughable account is given by Taylor, of a man who took a long journey to see a brother, but on arriving at his brother's house, and finding that he was dead, fell down in a fit. The usual means having failed to restore him, the surgeon took his death for granted, and proposed to open him, to discover the cause. But at this proposal, the supposed defunct suddenly opened

his eyes, and, leaping from the bed, took to his heels, at which no one will be surprised.

Cardinal Espinola, prime minister to Philip the Second, was not so fortunate. Amelot de Houssai relates in his MEMOIR, that, as the surgeon was opening his body to embalm it, he put his hand to the knife! The accident which was the cause of the melancholy fate of Vesalius, THE FATHER OF ANATOMY, is well known. Summoned to examine the body of a Spanish nobleman, he too precipitately commenced his dissection, for when he had exposed the heart, it was observed to palpitate. The incident becoming known to the friends of the deceased, he was accused of impiety before the Inquisition, when Philip the Second, in order to avert some dreadful sentence, interposed, and procured the injunction of a pilgrimage to the Holy Land, as an expiatory penance. He was therefore compelled to set out forthwith for Cyprus, and thence to Jerusalem; but, while in that city, the University of Padua invited him to fill its chair of anatomy, then vacant by the recent death of Fallopius. It is supposed, he accepted the invitation; for he was proceeding to Europe, but the vessel in which he had embarked was wrecked on the island of Zante, where he is said to have wandered wildly about the coast, and to have perished miserably.

The cruel death of the Abbé Prevot, so celebrated for his eccentricities and his writings, is thus related. He was attacked, when alone, by apoplexy, in the forest of Chantilly, on the 23rd of October, 1793. The country people, who were the first to discover him, supposing him dead, carried him to the nearest village, where the officers

of justice, with culpable precipitancy, directed the body to be opened, that the cause of his death might be ascertained. The surgeon, who seems to have blindly obeyed his orders, accordingly made a deep incision into the thorax, when the unfortunate Abbé gave a loud shriek. Further dissection was instantly arrested; but the mischief had been done, and he expired in reality, the victim of misdirected inquiry.

But, of all the remarkable instances of tenacity of life, under the most frightful circumstances, and accompanied with unexampled privations, that of FRANCIS CIVILE is the most astounding. His mother, dying pregnant in the absence of her husband, was buried hastily, from what cause is not mentioned. His father hearing of it the day after, hastened home, had the body disinterred, and the child extracted alive! As he grew up to manhood, he embraced the doctrines of Calvin, and, consequently in the religious wars, which at that time distracted France, he took a very active part. In 1562, when the Catholics besieged Rouen, in the defence of which he was actively engaged, he received a wound, which rendered him senseless, and he fell from the ramparts, among the dead and the dying in the ditch. During a cessation of active hostilities, those appointed to inter the killed, supposing him dead, stripped, and buried him. A faithful servant, however, who was desirous of giving his master honorable burial, went in search of the body; but his search after a while appearing fruitless, among so many disfigured corpses, he covered those again with earth which he had disinterred, and was returning, when accidentally looking back, he observed that one of the hands of a body that he had exhumed was above the

ground. Apprehensive that this might lure the dogs to the spot, and thus cause them to scratch up the bodies, he went back to bury it, when, at the moment of exercising this pious office, the moonbeams fell upon a diamond ring on the little finger, which he knew to belong to his master. He immediately disinterred the body, which, to his surprise, he found alive, and hastened with it to the hospital for the wounded. But the surgeon, fatigued with the labours of the day, and deeming Civile on the point of death, took no steps for his recovery. The disappointed though not disheartened servant, unwilling however to forsake his master, while a ray of hope remained, conveyed him to his own inn, where he languished four days without medical aid. At the end of this period, two physicians were induced to visit him, and having cleansed his wounds, and applied the remedies indicated in such cases, to the surprise of all, he was restored to health and strength. But his misfortunes had not yet terminated: the town being taken by assault, the successful party committed great excesses, not the least atrocious of which was their throwing Civile out of a high window. Fortunately he fell on a dunghill, but was so bruised and maimed, that he was unable to rise. There forgotten, or abandoned, by all, he passed three days, till his friend Ducroiset had him privately carried off at night to his country house, where by good care and management he recovered, and, what is more surprising, lived forty years after.

Dr. Fuller relates a case, in some respect similar to Civile's. Sir Gervase Scroop was so severely wounded at the battle of Edge-hill, that he was left among the dead, as one of the slain. Next day, his son Adrian went to

the king, and obtained his permission to search for his father's body, intending to give it decent burial. The search was considered fruitless by all but the young man, who having some general notification of where the body lay, searched, and found it still warm. Friction was immediately employed; in a few minutes, motion was perceived; in a few hours sensibility returned; and in the course of the day, he found his speech. In the end, he perfectly recovered, and lived "more than ten years after," says Fuller, "a monument of God's mercy and his son's affection."

Plato also records a circumstance of the same kind. He tells us that Erus Arminius, being supposed to be killed in battle, was left among the slain. But when they came to take up the bodies, ten days after, though all the others were found putrid and decomposed, his alone was sound and fresh. It was therefore carried home, that it might be consigned to the tomb, with all the funeral honors due to his rank. It was then kept two days, while the preparations were making for the performance of the obsequies, and on the twelfth day, being taken out to be laid on the pile, to the surprise of all, it suddenly returned to life. He is said to have "declared several strange and prodigious things, which he had seen and known, during all the time that he had remained in the state of the dead." This was evidently a case where the brain was only partially injured, and not suffering, from complete depression, as in that mentioned by Sir Astley Cooper, and recorded in another part of this work.

In the MEMOIRS OF LADY FANSHAWE there is a story recounted of her Ladyship's mother, which is very analo-

gous to that of Eras Arminius, especially where reference is made to what she saw and heard in her trance. We give the paragraph relating to it entire:—

"My mother being sick to death of a fever, three months after I was born, which was the occasion she gave me suck no longer, her friends and servants thought to all outward appearance she was dead, and so lay almost two days and a night; but Dr. Winston coming to comfort my father, went into my mother's room, and looking earnestly on her face, said, she was so handsome, and now looks so lovely, I cannot think she is dead, and suddenly took a lancet out of his pocket, and with it cut the sole of her foot, which bled. Upon this he immediately caused her to be laid upon the bed again, and to be rubbed, and such means (applied) as she came to life, and opening her eyes, saw two of her kinswomen stand by her, my Lady Knollys and my Lady Russell, both with great wide sleeves, as the fashion then was, and said, did not you promise me fifteen years, and are you come again? which they not understanding, persuaded her to keep her spirits quiet in that great weakness wherein she then was; but some hours after, she desired my father, Dr. Howlsworth, might be left alone with her, to whom she said, I will acquaint you, that during the time of my trance I was in a great quiet, but in a place I could neither distinguish nor describe; but the sense of leaving my girl, who is dearer to me than all my children, remained a trouble upon my spirits. Suddenly I saw two by me, clothed in long white garments, and methought I fell down upon my face upon the dust; and they asked why I was so troubled in so great happiness. I replied. O let me have the same grant, given to Hezekiah, that I

may live fifteen years to see my daughter a woman: to which they answered, it is done: and then, at that instant, I awoke out of my trance, and Dr. Howlsworth did there affirm that that day she died made just fifteen years from that time."

There is so much of tenderness and romance, in the following narrative, that, even if it were not true, it would awaken curiosity and excite interest. One cannot avoid recalling, on reading it, the Tomb Scene in ROMEO and JULIET, and with it all the witching mastery of genius which hallows every thing that SHAKSPEARE touched. It will be found in the first volume of the CAUSES CELEBRES:—Two men in trade, who lived in the Rue St. Honore at Paris, nearly equal in circumstances, both following the same business, and united in the closest bonds of amity, had each of them a child, much about the same age. These children were brought up together, and conceived a mutual attachment, which, ripening with years into a stronger and more lively sentiment, was approved by the parents on both sides. This young couple was on the point of being made happy, when a rich financier, conceiving a passion for the young maiden, unfortunately crossed their inclinations, by demanding her in marriage. The allurements of a more brilliant fortune, seduced her father and mother, notwithstanding their daughter's repugnance, to consent to the change. To their entreaties however, she was obliged to yield, and sacrificed her affections, by becoming the wife of the financier. Like a woman of virtue she forbade her earlier lover the house. A fit of melancholy, the consequence of this violence done to her inclinations, by entering into an engagement of interest, brought on a malady, which so far benumbed

her faculties, that she was thought by all her friends to be dead, and was accordingly consigned to the grave: The former lover, conceiving and hoping that what he had heard of her death might only prove a syncope, or fit of lethargy, as she had been before subject to these complaints, bribed the grave-digger, to convey the body to his house in the night time. He then used every means recommended for restoring suspended animation, and was at length overjoyed at finding his efforts prove effectual.

It is not easy to conceive the surprise of the young woman on her resuscitation, when she found herself in a strange house, and, as it were in the arms of her lover, who informed her of what had taken place, and the risk he had run on her account. She then comprehended the extent of her obligation to her deliverer, and love, more pathetic than all his persuasions to unite their destinies, determined her, on her recovery, to escape with him into England, where they lived for some time in the closest union.

At the end of ten years, they conceived the natural wish of revisiting their own country, and at length returned to Paris, where they took no precaution whatever of concealing themselves, being persuaded that no suspicion would attend their arrival. It happened however by chance, that the financier met his wife in one of the public walks. The sight of her made so strong an impression on him, that the persuasion of her death could not efface it. He contrived it so as to join her, and, notwithstanding the language which she used to impose upon him, he left her with the conviction that he was not deceived.

The strangeness of this event gave more charms to the woman, in the eyes of her former husband, than she had for him before. He acted with such address, that he discovered her abode, notwithstanding all her precautions, and reclaimed her, with all the regular formalities of justice. It was in vain that the lover maintained the right which his cares for his mistress gave him to the possession of her—that he represented her inevitable death but for him—that he (the husband) ought even to be accused of homicide, for want of having taken proper precautions to assure himself of her death—and a thousand other ingenious reasonings, which love suggested to him, but without the desired effect. He found that the judicial ear was against him, and not thinking it expedient to await the result of a definite judgment, he fled with his mistress into a foreign country, where they passed the remainder of their days without further molestation.

Such are the extraordinary facts of this most uncommon case, and which, contrary to most love-stories, ends happily. Our reading has supplied us, however, with another, which, in the circumstance of the soporific draught, forcibly recalls to memory, for a second time, the untimely fate of JULIET. The scene, however, is in a less sunny clime, and the catastrophe, though mournful, is relieved by the poetical justice which attends it. Not many years since, in St. Petersburg, a young nobleman, who had squandered his fortune, found his sister, to whom he had applied to relieve his wants, not in the least inclined to sacrifice her patrimony to his taste for dissipation. As he considered himself her heir, he determined to destroy her, and, with this view, found means to give her a draught, which was probably intended to

kill, but only produced a deep sleep. The news, through his means, being publicly circulated that she was dead, he prepared with all the external shew of the deepest sorrow for her interment. The arrangements being completed, the corpse, as is the custom, was placed upon the altar, and the priest was already in the act of pronouncing the last blessing, when one of her friends, who was passing through the place, and had been informed of her death, went into the church with the intention of pressing one farewell kiss on her cheek previous to the interment. Hastening to the coffin, she seized her hand and found it rather flaccid, but not rigid. She then touched her cheek, and imagined that she felt some natural warmth on it. She therefore desired that the ceremony should be postponed, to try if her friend might not be recalled to life: but her request was refused; and neither the brother nor the priest would listen to her solicitations, but, on the contrary, ridiculed her suggestions, and treated her as an insane person. In the hurry of her feelings, and in the anxiety of the moment, she hastily threw herself into her carriage, and drove to the neighbouring seat of government. Here she found a hearing, proper persons were appointed to accompany her to investigate the affair, and she returned back with all convenient speed. But the lady had been buried from the day before, and the inhuman brother had already taken possession of her property; while, there were hosts of priests and crowds of suborned witnesses, ready to attest that the unfortunate woman was really dead. And, as among the Russians, it is accounted heinous impiety to disinter a corpse, the desire of the generous friend to satisfy herself, by ocular demonstration, of the truth or falsehood of her suspicions, for a long

time experienced the most violent opposition. At length, from some circumstances which transpired, the commissioners of inquiry conceived some suspicion of the case, and determined on opening the grave, when it was discovered that the lady had been buried alive, as her face was much lacerated, and impressions of her nails were found on the coffin-lid. The brother and a priest were then taken into custody, confessed their crime, and underwent the punishment they so richly deserved.

Mrs. GEORGE ANNE BELLAMY, in the APOLOGY FOR HER LIFE, records a like case of Dr. Walker; but as she gives another striking instance of trance, which is, as it were, the precursor of this, we shall relate it first. It is rather singular, we may mention in passing, that we were unable to procure the work of Mrs. Bellamy, alluded to, from the library of the British Museum, but was compelled to refer to the excellent translation, entitled MEMOIRES, AVEC UNE NOTICE SUR SA VIE, PAR M. THIERS, until we procured the SCOTS' MAGAZINE, and referred to our paper before alluded to, in which we had quoted from the APOLOGY, at length, these very cases.

Mrs. Bellamy says, that Mrs. Godfrey, sister to the great Duke of Marlborough, had been for a long time ill, in consequence of anxiety brought on by the recent death of the duke; but, one Sunday, fancying herself better than usual, determined to rise, and go to chapel. Probably from unaccustomed exertion, or absolute debility, as she was dressing for that purpose, she fell down and to all appearance expired. The screams of her attendant, and a lady who was in the room with her, brought Colonel Godfrey to their assistance, who, probably having seen persons similarly attacked, directed that she should be

immediately put to bed, and that two persons should sit up constantly with her, till positive symptoms appeared of dissolution. The opinion of the physician was that life was extinct, and his friends entreated Colonel Godfrey to allow her to be interred; but he resisted all their persuasions, continuing firmly to adhere to his first resolution, until the Sunday following, when exactly at the same hour as the syncope, asphyxia, or trance, had attacked her on the preceding Sunday, signs of returning animation were perceived in the body, and she awoke just as the church-bell was ringing for service, which so perfectly eradicated, says the authoress, every trace from her memory of her insensibility, that she blamed her attendants for not waking her in time to go to church, as she had proposed to do. Colonel Godfrey, taking advantage of her unconsciousness of what had occurred, gave orders that she should by no means be made acquainted with what had happened, lest it should make a melancholy impression on her mind; and it is supposed that to the day of her death she remained ignorant of the infliction.

The case of Dr. Walker is thus told by Mrs. Bellamy; but we have abridged a portion of her redundancy, in which, like many lively writers, she sometimes too much indulges:—

"Upon our arrival in Dublin, my mother and myself were very kindly received by Dr. Walker. The doctor, at this time, was writing a treatise against the Irish custom of burying the dead within a few hours after their decease. When my mother heard on what subject he was writing, she related to him the story of Mrs. Godfrey, and as soon as she had concluded it, she promised, that, if she should be in the same kingdom with him when he

died, she would attend to the corpse, and take care that it was not entombed whilst there was the least probability of return to life." The sequel of the story is, for we have deviated somewhat from Mrs. Bellamy's narrative, that, some time after, Dr. Walker fell ill of fever, and "one afternoon, sending to inquire after him, the servant returned, and informed her, that he had died during the night, and that they were going to bury him; she added; that as they were about to shroud the body, the orifices which had been made in the arms for letting blood, had bled afresh." For reasons which are stated, neither Mrs. Bellamy, nor her mother, could go to the doctor's that night, and they therefore sent the servant in a coach, directing, that if the body was interred, to have it taken up at all costs; for they had learned, that Mrs. Walker, had been persuaded by her sister, to leave the house, and retire with her to Dunleary. The servant while on her way, either from apprehension or love of company, contrived to take several persons with her, and, on arriving at the doctor's, found the body had been interred immediately after she had left, lest the disorder of which he had died should be infectious. She also learned that, Mrs. Walker being a dissenter, the body had been interred in the Anabaptist burying-ground, at the other end of the town. She proceeded therefore in search of the sexton, still accompanied by her friends, but as they could not find his house, they clambered over the gate, and got round the grave, where the servant alleged she heard a groan. About daybreak, by means of some laborers who informed them where he lived, they found the sexton, who, after considerable hesitation disinterred the body, and, on opening the coffin,

—"I shudder while I relate the horrid scene," says the authoress,—"they found the body now totally deprived of life, but observed that the doctor had endeavoured to burst it open, had turned upon his side, and the arms had bled afresh! The family however, hearing of the circumstance, the body was ordered to be re-interred, and the affair was hushed up."

Before we proceed, we cannot avoid remarking on this mysterious presentiment, and its no less mysterious fulfilment. Here was a man, who, as it were, possessed an inherent and instinctive knowledge that he should be buried alive; who was so convinced of it, that he wrote a treatise, with a view if possible to avert so horrible a calamity; and, still further to assure himself, entered into a compact with a second party, for the fulfilment of certain precautions, which were to be observed before he should be consigned to earth, yet disappointed in the end, and compelled to bow to the inscrutable fiat of that law, of natural contingencies, which the imaginative Greeks erected into a supertheism, and consecrated by the tremendous name of DESTINY; and to which, not only the winds and the waves, the moon and the stars in the firmament, and the earth itself, and the waters under the earth, and the passions in the human breast, were subservient, but which even the Ruler of the Gods himself, the cloud-compelling Jupiter, dreaded, and obeyed! It is perhaps scarcely to be wondered at, that the mind, shocked into doubt by the contemplation of such incidents, should, in Socrates and Cardan, for explanation, seek shelter in a dæmon—in Johnson, in an apparition—or in Franklin, in a dream; or that in Beaumont, the same restless desire of inquiry

should assume the symptoms of confirmed monomania, and exhibit itself in an elaborate, a learned, but intellectually mis-directed and mis-conceived volume. Contemplation on this subject, therefore, is apt to degenerate into mysticism, and inquiry into confusion; while it is doubtful if any good can be attained by prosecuting research, establishing data, or multiplying hypotheses, which lead but to disappointment, and carry us beyond the confines of that world which is bounded by the evidence of our senses, to be lost in another, of which we know neither the nature by which it is upheld, nor the laws by which it is governed. It is more consonant with sound views of philosophy, which is but the result of common sense, collected, compared, enriched, and corrected, by an accumulation of experiences, to relate what has happened, rather than to pretend to explain why it should have happened. The fact is undoubted; the conclusion uncertain; and perhaps the result not very clear; but it is better that every man should judge for himself than that an author, by seeking to explain, should dogmatize his reader. Where nothing certain is known, but all is conjecture, one man's opinion is as good as another's. We therefore dismiss the subject, and apologize for the digression.

The story of the sexton, who cut off a lady's finger to possess himself of a valuable ring, is common. The original, however, is the following: Retchmuth Adolch was the wife of a merchant of Cologne. In 1571, when the plague visited that city, and destroyed its thousands, she became one of its supposed victims, and, being deemed dead, was interred with great pomp within the city. Fortunately for her, her husband had allowed a very

valuable ring to remain on her finger, which, being perceived by the sacristan, so excited his cupidity, that at midnight he entered the vault, and attempted to possess himself of it. The violence which he was obliged to use, however, awakened the lady, who was only entranced, and the act of rising in her coffin so terrified him, that he fled precipitately from the vault, leaving his lantern behind. Retchmuth Adoleh was thus enabled to leave the tomb, and proceed to her house, where the usual remedies being resorted to, she promptly recovered her health, and became in time the mother of three children. At her decease, she was buried near the door of the same church, and a tomb erected over her grave, from which, says the narrator, this account is taken.

The following case is from a periodical of repute. A girl named Shorigny, about twenty-five years of age, residing in Paris, had been for two years subject to fits. On the twenty-eighth day after she was attacked, the physician who came to visit her was informed that she had died during the night, which much surprised him, as when he had left her, the night before, she was better than usual. He went to see her, in order to convince himself of the fact, and, on raising the cloth with which she was covered, he perceived that though her face was very pale, and her lips discolored, her features were not otherwise in the least altered. Her mouth was open, her eyes shut, and the pupils very much dilated; and the light of the candle made no impression on them. There was no sensible heat in the body, but it was not cold and flabby, like corpses in general. The physician returned the next day, determined to see her again before she was buried, and, finding that she had not become cold, he

gave orders that the coffin should not be soldered down until putrefaction had commenced. He continued to observe her during five days, and at the end of that period a slight movement was observed in the cloth which covered her. In two hours it was found that the arm had contracted itself; she then began to move, and it was clear that it had only been an apparent death. The eyes soon after were seen open, the senses returned, and the girl began gradually to recover, and at length returned to perfect life.

Such cases can be multiplied. In the CANTON GAZETTE was lately published a narrative, to the effect that, on the western suburb of Canton, a person named Le bought as a slave-woman a girl name Leaning. "At the age of twenty-one, he sold her to be a concubine to a man named Wong. She had lived with him three years. About six months ago she became ill, in consequence of a large imposthume on her side, and on the 28th of the present moon died. She was placed in a coffin, the lid of which remained unfastened, to wait for her parents to come and see the corpse, that they might be satisfied that she died a natural death. On the 28th, while carrying the remains to be interred in the north side of Canton, a noise or voice was heard proceeding from the coffin, and on removing the covering, it was found, that the woman had come to life again, though she had been supposed dead for three days." Here we have, unfortunately, no account of the woman's feelings while confined in the coffin, or if even she was conscious: but in the PSYCHOLOGICAL MAGAZINE may be found a similar case, in which this desideratum or omission is supplied. It is a very extraordinary narrative:—"A young lady, an

attendant on the Princess ———, after having been confined to her bed for a great length of time, with a violent nervous disorder, was at last, to all appearance, deprived of life. Her lips were quite pale, her face resembled the countenance of a dead person, and the body grew cold. She was removed from the room in which she died, was laid in a coffin, and the day of her funeral fixed on. The day arrived, and, according to the custom of the country, funeral songs and hymns were sung before the door. Just as the people were about to nail on the lid of the coffin, a kind of perspiration was observed to appear on the surface of her body. It grew greater every moment, and at last a kind of convulsive motion was observed in the hands and feet of the corpse. A few minutes after, during which time fresh signs of returning life appeared, she at once opened her eyes and uttered a most pitiable shriek.

"Physicians were quickly procured, and in the course of a few days she was considerably restored, and is probably alive at this day.

"The description which she gave of her situation is extremely remarkable, and forms a curious and authentic addition to psychology. She said, it seemed to her that she was really dead; yet she was perfectly conscious of all that happened around her in this dreadful state. She distinctly heard her friends speaking and lamenting her death, at the side of her coffin. She felt them pull on the bed-clothes, and lay her in them. This feeling produced a mental anxiety, which is indescribable. She tried to cry, but her soul was without the power, and could not act in her body. She had the contradictory feeling, as if she were in the body, and yet not in it, at

one and the same time. It was equally impossible for her to stretch out her arm, or to open her eyes, or to cry, although she continually endeavoured to do so. The internal anguish of her mind was, however, at its utmost height, when the funeral hymns were begun to be sung, and when the lid of the coffin was about to be nailed on. The thought that she was to be buried alive was the one that gave activity to the soul, and caused it to operate on her corporeal frame."

Thus far we have given cases on the authority of others: we now present two on our own. The first is that of a gentleman named L—— G——, a Scotchman by birth, but, emigrating early in life to Jamaica, became from his long residence, as it were, almost a native. Happening to be attacked with fever, after a few days he was supposed to be dead, and the body abandoned by the medical attendants. From the rapid decomposition which animal substances undergo, immediately as the phenomena of life cease to manifest themselves in the West-Indies, interment generally takes place very soon after the breath has left the body, and, accordingly, in twenty-four hours from the time of the supposed death, this gentleman was shrouded and put in a coffin. Fortunately however for him, the preparations for the funeral were delayed some ten or twelve hours, and, when the undertaker proceeded to screw down the coffin, those about him perceived a moisture on the skin. This led to further examination, and it was discovered that he was alive. Remedies were instantly resorted to, and he recovered and lived many years after to tell this story. A melancholy event, however, was connected with his recovery: a young female, who had assisted to make his

shroud and cap, whether from over-exertion, anxiety, or the malignant nature of the fever, fell ill as he recovered, died, and was buried in the very shroud which she had made but a few days before! Before we proceed to the second case, it may not be uninteresting to notice, that the constitution of Mr. G. seemed to have been remarkably tenacious of life. He was a tall, powerful man, very corpulent, and a prodigious eater, chiefly of fish, and was alleged to have been a martyr to anaphrodisia from a very early age. He was twice operated on for cancers of the face, by Sir Astley Cooper, each time making a voyage from the West Indies to London for the purpose, and died at length, we believe, of fever. His head was remarkably round, and, for a large man, very small, which was again rendered still more remarkable, by his wearing a hat with a prodigious brim.

The second case was brought under our notice in the following manner. Passing through Glasgow, in 1825, we fell in at the hotel, with a gentleman who had been in the West Indies, and, as we had left Jamaica but twelve months before, it naturally followed that a sort of intimacy sprung up between us on the spur of the moment, and we conversed very freely on various subjects. He was an intelligent man, and presuming therefore on his good sense, we took the liberty of asking him the cause of a remarkable scar which he had on his forehead? He replied, without hesitation, that, when a youth, he had been sent to a relative in Dominica, a general merchant or store-keeper there, and that he became his clerk. After a short residence in the island, the relation, who lived some distance from Roseau, the principal town in Dominica, was attacked with fever, and, as was sup-

posed, died. According to custom, he was within a very few hours after shrouded and placed in a coffin; and as the narrator was the only white person within a considerable distance, he was requested, by the brown housekeeper and the other attendants of the supposed deceased, to sit up with the corpse. Feeling drowsy towards daybreak, he laid his head upon the table, his face being towards the coffin, and the door to his right hand, and fell into a dose. He could not have been long asleep, when he was awakened by a strange noise, and, lifting up his head, to his horror he beheld the corpse shrouded in its hideous grave-clothes, making desperate efforts to get out of the coffin, having pushed off the lid, which had been laid over it, but not nailed down. His fears were extreme, and for a few moments he could not stir; but as the corpse projected one leg, in the act of getting out of the coffin, his terror animating him with desperate resolution, he rushed to the door and plunged headlong down the stairs, at the bottom of which he lay insensible. The noise of the fall brought all the inmates to the spot, when they discovered that the gentleman was not dead, but had been only entranced. He recovered perfectly in a few days, and lived many years after; whereas our narrator had fractured his skull, and never thoroughly recovered his health, until he returned to Scotland.

We were so impressed with the interest of this case, that we immediately made a note of it, with the gentleman's consent, who, we believe, is still alive in Glasgow, and can attest the fact.

We have now but one or two more conditions of

cerebral inactivity to consider, and, as we have extended the chapter to a length which may prove tedious, we shall defer the consideration of their phenomena to the next.

CHAPTER VI.

HIBERNATION.—WHAT ANIMALS HIBERNATE.—EXPERIMENTS OF SIR GEORGE EAST, DUPONT, AND GOUGH.—SPALLANZANI CONVERTED A PIGEON INTO A CARNIVOROUS BIRD.—HUNTER BRED AN EAGLE TO LIVE ON VEGETABLES, AND A SHEEP ON FLESH.—A LIZARD TAUGHT TO DRINK SPIRITS AND WATER.—CREATURES OF HABIT AND CREATURES OF INSTINCT CONTRASTED.—DUCROW.—TAGLIONI.—CHABERT.—THE TONGUESE.—GYLONGS.—ARABS.—SUNNIASSES.—RHAANS.—DR. DUNCAN, JUNIOR, OF EDINBURGH.—CASE OF ACQUIRED HABIT MENTIONED BY SANCTORIUS.—MITHRIDATES.—EXPERIMENTS OF DRS. FORDYCE, BLAGDEN, DUHAMEL, AND TILLET, ON THE DEGREE OF HEAT THE BODY IS CAPABLE OF BEARING.—RICHERAND'S OPINION OF THE SPANIARD SAID TO BE INCOMBUSTIBLE.—TORPID ANIMALS BY A PROPER SUPPLY OF FOOD RENDERED ACTIVE AT ALL SEASONS.—BUFFON'S OPINION.—DR. PLOT'S CASE OF TORPIDITY IN A FEMALE, FROM DANIELUS LUDOVICUS.—MARY FOSTER.—PALLAS'S EXPERIMENT ON THE MARMOT.—LUCID ARRANGEMENT OF FACTS ON HIBERNATION BY DR. ELLIOTSON.—FISH MAY BE FROZEN SO HARD AS TO BE BROKEN IN PIECES, AND YET IF THAWED BEFORE THE FIRE RETURN TO LIFE.—A FROZEN LAKE BY THE HEAT OF THE SUN BECOMES ANIMATED WITH INSECTS.—MOSQUITOES FROZEN IN CLODS, IF PLACED BEFORE THE FIRE RECOVER THEIR ACTIVITY.—INSECTS PREPARE FOR HIBERNATION AS THE SEASON COMES ROUND, INDEPENDENT OF COLD.—THE GARDEN-SNAIL.—THE EEL OF BLIGHTED CORN.—SEEDS AND BULBS MAY REMAIN MANY YEARS IN THE EARTH WITHOUT LOSING THEIR VITALITY.—A BULB WHICH HAD REMAINED IN THE HAND OF A MUMMY IN ONE OF THE PYRAMIDS OF EGYPT FOR TWO OR THREE THOUSAND YEARS, GREW AND PRODUCED AN UNKNOWN PLANT IN ONE OF OUR BOTANIC GARDENS.—ANALOGOUS FACTS OF THE RICINUS COMMUNIS OF THE WEST INDIES.

In some animals, and in all the insect tribe, there is a periodical prolongation of sleep, which is called HIBER-

NATION; and this state seems to be a condition of their being. Nevertheless, various opinions, very dissimilar from each other, have been promulgated on its nature and cause, and some of them ingeniously supported by argument and ably illustrated by experiment. We cannot do better than lay these opinions and arguments before our readers, as the subject is replete with interest and worthy of a deeper consideration than we can give it. Nevertheless, the outline that we shall offer may induce our readers to extend their researches, and, perhaps, augment our knowledge; and, with this view, we shall first take a rapid glance of the phenomena attending hibernation, and then proceed to those opinions and arguments—especially of DU PONT and GOUGH—to which we have alluded.

It is supposed, that the periodical torpidity which takes place in many different animals, is intimately connected with the general phenomena of respiration: but this, we think, remains to be proved. Among quadrupeds, three species of bats, at least two of bears, the badger, the hedgehog, the hamster-rat, some marmots, the dormouse, and a few others, pass the greater part of winter in this state of inactivity, which differs however from sleep, in the slowness of circulation and respiration, and in the little susceptibility of impressions from external stimuli, which these animals oppose. The same phenomena present themselves, in a remarkable manner, in tortoises, lizards, and other reptiles; and some birds and fishes, though hibernation is not common in these classes, are occasionally found in a state of torpor. Most insects that survive the autumn, pass the winter in a torpid state; and even man has been known to remain

for several days in a state of suspended animation from the effects of cold, without finally perishing. It is chiefly however in quadrupeds, that the phenomena of hibernation have been minutely examined; and the following is the result of the examination. During the state of torpidity, the animals appear scarcely to live; sensation seems entirely suspended; their irritability is so much diminished, that they may be cut, torn, or have their legs or tails broken off, without exhibiting any symptom of motion or expressing any sign of feeling. Their digestion, or at least their appetite for food, is also suspended, and their secretions and excretions are discontinued. The only functions which appear to be carried on, are those of circulation and respiration, which are so languid, that the animal can but just be said to breathe, and the heart to beat. In some quadrupeds, too, the absorbent system still continues active; for these animals are commonly very fat when they retire to winter quarters, but quite emaciated when they leave them in the spring. This, however, is scarcely the case with reptiles, which are found to lose very little of their weight during hibernation. In those animals which hibernate under the protection of man, it is found that if they are removed from their retreats, and exposed to a gentle heat, they partially recover the use of their faculties, and sink again into torpidity when remanded to their cell; but if the heat to which they are exposed be too great, or too suddenly applied, the animal is commonly destroyed.

That animals do not lose weight during hibernation, was, we believe, first observed by Sir George East. He weighed a tortoise several successive years, at its going to earth, in October, and on its coming out, in March, and

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found that, of four pounds four ounces, it lost only half an ounce. This fact has been ascertained, by other observers, of toads, serpents, and insects. Baker kept a beetle three years without food, during which time it would appear to have hibernated, and was not sensibly reduced in size, nor languid, nor weakly—though it was one whole night immersed in spirits—by which we infer that it could not have lost weight.

M. Du Pont de Nemours, in a paper which he read at the First Class of the Institute, in October 1806, traced, with great care and acumen, the causes which he supposed to lead or give rise to hibernation in animals. He seemed to consider that condition "a kind of death, that may be presumed to be only apparent." He begins by stating, that the effects of heat vary according to the body to which it is applied; as, to liquefy steel, or platinum, or porcelain, intense heat is necessary; for lead, less is requisite; and, for frozen water, a portion still smaller. On the other hand, the degree of cold requisite to render mercury solid is very great, while that which forms ice is very moderate. Some vegetables are not killed by the severest frosts, which, though it destroys their leaves, spares their stems. Herbaceous plants, though their stalks be killed in winter, yet their roots remain uninjured; and even some roots resist the severest frosts. The ant, the fly, and other insects; the snail and toad; dormice, and marmots, and other mammalia, sleep in winter; and serpents may be frozen without being killed. It is observed, continues M. Du Pont, that the little fructivorous animals sleep first, because it is the season when their food begins to disappear, after having fattened them by its temporary abundance, and, in this fact, supplied

them with a narcotic to induce sleep, as well as food to support them while it lasts; and, as most of the animals conceal themselves to sleep, they cease to afford food to the devourers, their enemies, which, in their turn, lose sense and motion, and sleep also. These animals sleep only when their food is wanting. Hence, the white bear, which lives by fishing on the sea-shore during the summer, and on the islands of ice in autumn, does not fall asleep till the ice is united and thickened, and being raised too high above the water, becomes no longer the fit resort of the seal. His means of subsistence continuing longer, a much severer cold is requisite to deaden in him, the call of seeking food, than in the black bear, in the first place, a great devourer of honey and vegetables, and in the second, in the brown bear, which lives on those animals driven by winter into their retreats, before him. Providence has ordered hibernation, to prevent these animals from starving. If they retained their energy during winter, they would perish from inanition. In the state of hibernation they are unacquainted with want; they feel not its pains; they incur not its danger. Their sleep is a succedaneum for food, and nature shields them from the necessary want of it, by the realization of that axiom which has been considered but a jest, namely, that he who sleeps, dines. Neither is their stupor painful, but it is rather pleasurable. It commences even with a sensation of tranquil enjoyment—a sensation not unknown to ourselves. It is not even a disease, but is friendly to life; for sleep is an asylum, in which life fortifies itself, expending little and husbanding its resources. It is even a protection from the pains and injuries of cold, and renders animal bodies more capable of retaining

heat by diminishing their conducting powers. When our limbs freeze we continue insensible of it; we know not when it happens; we do not feel the approach of the frozen state. On the contrary, we fancy ourselves growing warmer; and if no one of the limbs be more affected than the other, our condition is not only agreeable but pleasurable. We feel a seducing and delightful propensity to sleep. We are angry with our friends who urge us to walk on, who prevent us from indulging our inclinations; we entreat them to allow us to close our eyes but for a moment; and, if they yield, we sleep!

Death, says this ingenious philosopher, in this case, is only apparent. A person thus asleep, is no more dead than the dormouse, deprived of sense and vital action. Hence, the treatment which he recommends in cases of suspended animation from cold, as we have seen in that of the Swedish peasant, where life appeared to be extinct, is by diminishing cold by slow gradations; but with this we have at present nothing to do.

This opinion of M. Du Pont, Gough conceived, was supported by the authority of antiquity, rather than by facts and the known habits of animals. And he thus commences his paper in refutation of Du Pont, "M. Du Pont refers torpidity, partly to the benumbing effects of the cold which prevails in winter, and partly to a high degree of corpulence, which is generally contracted in autumn, from an unrestrained indulgence in the abundance and delicacies of that season. He moreover supposes that animals do not submit to this long suspension of the vital functions in obedience to the dictates of necessity; on the contrary, he imagines them to court a lethargic habit, in consequence of certain pleasing sensations, which are known

to precede the first moments of sleep." He then opposes Du Pont by four objections. First, that animals do not submit to torpidity from choice, but from necessity; and, when cold happens to be the immediate cause, they fly from it, if possible. Second, that certain animals apparently support a voluntary suspension of their functions in summer, as well as in winter, when food is withheld from them. Third, a quadruped, noted for its lethargic disposition in winter, may be so strengthened by a generous diet, as to retain the full use of its faculties during the time of a severe frost; from which we may infer, that an emaciated habit of body is the predisposing cause of torpidity, in opposition to the common opinion, which assigns this office to corpulence. Fourth, the united action of hunger and a low temperature has produced a kind of apparent death in a human being, who was restored to life by stimulating remedies, after lying several days without sense or motion.

The first of these four objections he supports by experiments, which he made with the common hearth-cricket, the GRYLLUS DOMESTICUS of entomologists.

This little animal, it is known, passes the hottest part of the summer in the sunniest situations, concealed in crevices of walls or heaps of rubbish, and quits its summer abode about the end of August, when it fixes its residence by the fireside of the cottage, or in the kitchen of the more ambitious farmer, where it multiplies its species, and is as merry at Christmas, as other insects are in the dog-days.

Thus do the comforts of a warm hearth afford the cricket a safe refuge, not from death, but from temporary torpidity; which it can support for a long time,

when deprived of artificial heat. Our author says that he came to the knowledge of this fact, by planting a colony of these insects in a kitchen, where a constant fire was kept up through the summer, but which was discontinued from November to June, with the exception of a day once in six or eight weeks. The crickets were brought from a distance, and let go in this room, in the beginning of September, 1806; where they increased considerably in the course of two months, but were not heard or seen after the fire was removed. Their disappearance induced Gough to believe that the cold had killed them; but a brisk fire having been kept up for a whole day in winter, the warmth awakened them from their torpidity, towards the evening, and they continued to chirp and move about the greater part of the following day, when they again disappeared, compelled by the returning cold to retire to their former retreats. On the 28th of May, 1807, after a brief interval of very hot weather, they left the kitchen, and did not revisit it till the 31st of August. Here they passed the autumn, and remained torpid up to January, 1808, when the paper was written; but recalled to temporary wakefulness, whenever the fire was lighted.

From this partial or conditional exemption of crickets from torpidity, Gough argued, that the same accommodating faculty might be attributed to, or may be possessed by, other animals, nearly connected with the welfare of society; and adduces the frequent instances of sheep living three or four weeks, under snow-drifts, with little or no food. A ewe, he says, was recovered alive from a snow-drift in Cumberland, after remaining under it five weeks, in a space not exceeding one yard in diameter.

Were "the same, or any other sheep, confined half the time in a moderately-warm room, with but one square yard of grass, no doubt could be entertained respecting the event of the experiment."

The second objection was no less satisfactorily sustained. He took several specimens of the garden-snail, HELIX HORTENSIS, and enclosed them in a water-box, perforated with holes, thus secluding them from food and water, but not from air. He treated another species of snail, the HELIX ZONARIA, in the same manner; and a few of both species were put into a bottle, which was well corked, so that not only food and water, but air also, was excluded.

Those that were deprived of air soon died; but those of both species, which were confined in the perforated boxes, did not die. On the contrary, they retired into their shells, and closed the apertures with membranes.

In this state they remained to all appearance dead; but, if they were taken up, and placed in a glass of water of the temperature of 70 or 72 degrees, they revived, and they were even found alive, constantly sticking to a plate which covered the glass, though they were repeatedly left in this situation four or five hours. A large garden-snail supported this confinement nearly three years, after which it revived upon being put into water, like the rest. The aquatic species of snails do not, however, possess this "accommodating faculty," for the HELIX PUTRIS, treated like those above, did not survive the experiment.

The third objection he established by the following experiments. He procured two dormice, MUSES AVELLANARII, in January, 1792, and confined them in a cage, furnished with a thermometer, and placed in a chamber

where no fire was kept. They were regularly supplied with water, and food consisting of hazel-nuts and biscuits. By close attention to the state of the thermometer, he found that whenever it fell to 42 degrees, they became inactive, and remained apparently insensible, as long as it continued at or fell below 42 degrees; but, as often as it rose to 47 degrees, they became susceptible of external impressions, awakened in the evening, and attacked their provisions, of which they consumed not a little. Persisting in the same dry food during the summer, they grew sickly, and died before the winter commenced; so that the experiment was arrested. However, in April, 1793, he obtained a third dormouse; and former experience having taught him to manage them in a manner more congenial to their habits, the generous diet not only preserved it in good health and high condition, but appeared to fortify it against the benumbing effects of cold, which it supported throughout the following winter much better than the first had done, never sleeping more than forty-eight hours, and that seldom without visiting the cup which contained its food.

He now began to suspect that the torpidity of the dormouse, in its wild state, was nothing but a custom imposed by necessity, on a form of life, which nature intended should support its phenomena, during the cold of winter, with but little food, imperfect respiration, and a languid or perhaps partial circulation. This supposition, he thinks, can alone explain the difference of the manners observable in the dormice he had in 1792 and the last described; for, as soon as the necessity for sleeping was removed, the propensity to become torpid, in a great measure, disappeared. The uncommonly severe weather,

he says, which ushered in the next year, namely, 1795, confirmed the foregone opinion apparently beyond exception; for the constant use of a generous and plentiful diet had, by this time, completely conquered the torpid habit which the animal, in all probability, contracted in its wild state, from hunger, or, more properly, from a state of inactivity, voluntarily imposed upon itself, with a view to husband its stock of nuts, which but for this precaution would frequently have been too quickly exhausted. Notwithstanding the hard frost of January, it survived the cold, awakened every evening, and consumed, in the course of the night, from one hundred to one hundred and twenty grains of food. Nay, its habits seemed to have undergone a remarkable change, as it frequently gnawed the ice which covered the water in its cage; and in the coldest part of the month, its nest happening to receive an injury, it undertook to repair it, and perfected the work in one night.

We may remark here, that the notion, that hibernation in animals owes its presence to a habit contracted by hunger, is very fanciful. Hibernation, in certain classes of animals, is evidently a condition, not an acquired habit of their being; and, Gough argues against his proposition, when he adduces instances of animals which have changed their habits, or conquered their natural repugnance to certain modes of being, and certain descriptions of food. He says that Linnæus has preserved the memory of a tame fieldfare, TURDUS PILARIS, belonging to a vintner in Stockholm, which learned to drink wine, and became bald in consequence. He knew a mastiff, he adds, which was equally fond of ale, and never failed to get intoxicated whenever he could. "The hyena lives on the roots of

fritillary in the unfrequented parts of Africa; but, in the vicinities of populous cities, it changes into a disgusting glutton, feeding on filth and carrion. May not the nasty ways of the domestic hog be considered as so many new habits, introduced by similar causes, in lieu of the cleaner manners of the wild animal? The pied fly-catcher, MUSCICAPA ATRICAPILLA, lives on soft seeds in this country; but its food is very different in Norway, especially during the winter, when it repairs to the habitations of men, where it subsists on flesh dried in the smoke. Signior Spallanzani converted a pigeon, which is a granivorous, into a carnivorous, bird, by inducing it in the first place, to eat fresh meat, and, afterwards, to give a preference to putrid animal substances." He might have added that Hunter brought an eagle to live entirely on vegetables, and a sheep on flesh!

But had he bred from his dormice, the vintner from his fieldfare, or Hunter from his sheep or eagle, their offspring would have presented the common attributes of their nature; the dormouse would have hibernated, the fieldfare have fed on berries, the lamb on grass, and the eagle on flesh. With respect to the hyena, his teeth are so formed, that it is evident that he can be only driven to feed on roots, when deprived for a long period of his natural food. The temporary change in the habits of animals prove nothing. We knew a lady, in the West Indies, who had contrived by numerous acts of kindness to attach a lizard to her person, and, whenever she sat down to dinner, he regularly made his appearance, and drank rum and water till he was tipsy.* This

* Weak rum-and-water is considered, and is perhaps, the most wholesome beverage for the West Indies, and as such is generally drunk by both sexes.

was but an acquired habit, and doubtless was not transmitted to its offspring in the egg. We may still further quote examples of tastes or faculties acquired by habit. There are few of us who do not take malt, or eat pepper, or mustard, or drink fermented liquors, and many of us smoke tobacco; but which of us has a child, born with a taste for malt, pepper, mustard, or a cigar? Whereas, where is the child that does not naturally drink milk, love sugar, or eat bread? That education may do much towards altering or modifying the habits of animals is certain. An Italian philosopher was of opinion, that the habit created by education was stronger than the instinct implanted by nature. He had taught a cat to hold a candle while he read, and averred that no appeal to the natural instinct could overcome this habit. A friend dissented from him, and asked permission to put the cat to the test. The challenge was accepted, and the time fixed for the trial. The friend came, but not unprepared. He brought several mice in his pocket, and, while the creature of artificial habit was engaged in performing his acquired duty, he suddenly uncaged the mice. Nature assumed her supremacy on the instant. The cat let fall the candle, and flew at the mice, and the philosopher acknowledged he was wrong.

But habit, even in men, will do much to call into being new instincts or habits, or, at least, faculties not common to the race. Who can forget the surprising agility of Ducrow, the sylph-like motion of Taglioni, or the alexipharmic exhibition of Chabert? Yet none of their offspring inherit the acquired properties of their parents. Nay, even the necessary instinct of hunger may be not only appeased for a time, but almost annihilated. Bell, of

Antimony, speaking of the Tonguese, says, "I have been told, by some of these hunters, that, when pinched by hunger, they take two thin boards, one of which they apply to the pit of the stomach, and the other to the back, opposite to it. The extremities of these boards are tied with cords, which are drawn tighter by degrees, and prevent their feeling the cravings of hunger." The abstinence, from habit, of the American Indians is remarkable, of the Gylongs of Tibet, the Arabs of the Desert, the Sunniasses, or Indian pilgrims, and the Rhaans, the fakirs, dervishes, etc. The late Dr. Duncan, Junior, of Edinburgh, imitated for a twelvemonth the example of the Rhaans and Carmelites.* He ate but one meal a day, and found himself heavier at the expiration of that period, than he was when he instituted the experiment.

We could adduce, however, still more surprising instances of the influence of habit, did our space permit their insertion here. We hastily allude to the disgusting case of the shepherd mentioned by Chopart,† and to that of the criminal, who, as we are told by Sanctorius, was taken ill on being removed from a noisome dungeon, and did not recover, until he was replaced in the impure air to which he had been so long accustomed. The classical reader will recollect, also, the case of Mithridates. Fearing to be taken alive by his enemies, he attempted to put an end to his life by poison, but he had so long inured himself to its action, that the largest doses failed to produce the effect. The temperature of the human

* See an article by the author, entitled THE PHYSIOLOGY OF ANIMAL SUSTENANCE, (Med. Times, No. 124, Vol. v.).

† MALADIES DES URINAIRES, Tome 2.

body is habitually between ninety-six and ninety-eight degrees of Fahrenheit, and "it preserves this same degree of warmth under the frozen climate of the polar region as well as under the burning atmosphere of the torrid zone, during the severest winters and the hottest summers;" yet Blagden and Fordyce in England, and Duhamel and Tillet in France, proved that it was capable of enduring, without injury, a degree of heat that would bake animal substances! This latter experiment we saw ourself performed by Chabert. Richerand says, "habit has a remarkable influence on the faculty which the body possesses, of bearing a degree of heat much exceeding that which is natural to it. Cooks handle burning coals with impunity; workmen employed in forges leave the mark of their feet on the burning and liquid metal, at the moment when it becomes solid by cooling. Many, no doubt, recollect the too-famous instance of a Spaniard who became so general a subject of conversation in Paris. This young man, in making his way through a house on fire, perceiving that the heat was less inconvenient to him than he had imagined, applied himself to bear, with impunity, the action of fire, and was enabled to touch, with his tongue, a spatula, heated red hot, and to apply the soles of his feet and the palms of his hands to a red-hot iron or to the surface of boiling oil. Nothing can equal the absurdity and the exaggeration of the stories that were told of this man, except the ignorance and the want of veracity of those who invented them. The following is a correct statement of his feats: he passes rapidly along the surface of his tongue, which is covered with saliva, a red-hot spatula, the action of which seems merely to dry it, by bringing on an evaporation of the fluids with

which it is covered. After carrying the spatula from the base to the tip of the tongue, he brings it back again into his mouth, and applies it to his palate, to which it communicates a part of its heat, at the same time that it becomes moistened with saliva. In a public exhibition, having carried on the application of the spatula too long, the caustic effects of the heat showed themselves; the epidermis was detached, and found coiled, like the outer covering of an onion, in the cloth which he used to wipe his mouth. He does not dip his feet and hands in boiling oil; he merely applies his palms and his soles to the surface of the fluid, and he repeats this frequently, with only a short interval between each application. When the experiment is carried on for a certain length of time there is emitted a smell of burned horn. No one has yet observed that, though this man's hands are not callous, the palms of these and the soles of his feet are cushioned with fat. A thick layer of fat, which is a bad conductor of heat, separates the skin from the subjacent aponeuroses and nerves: this circumstance, in a certain degree, accounts for his imperfect sensibility."

Here, then, is a very remarkable case of an acquired habit of resisting the influence of the most powerful decomposing agent, electro-galvanism excepted, with which we are acquainted; yet we are convinced that had the man ceased, but for a short time, to practise exposure to heat, his body would have again resumed that sensibility to caloricity common to our nature. Of one thing, however, we are assured, that he was not able to transmit this acquired property to his offspring. But let us now desist, and return to Gough, from whom this digression has too long separated us.

The fourth objection, and we have taken some pains to follow the author through his ingenious disquisition, he substantiates thus: "I have shown," he says, "in the present essay, that a quadruped, remarkable for its torpidity, may be rendered active at all seasons, by a plentiful and generous diet. Perhaps a contrary regimen, properly managed, might incline an animal, no less remarkable for its activity, to become torpid at all times." To this we may reply, that such a condition in a dog or cat, for example, could only be produced by causes which would induce disease, as starvation or very extreme cold. The condition of torpidity in them is abnormal, and contrary to their nature, and to the nature of most animals. Whereas wakefulness is the natural state, and that condition of being in which the greatest number of proofs of organization and intelligence are manifested, and the greatest number of vital phenomena developed. Torpidity is the absence of all these. Buffon entertained some opinions similar to Gough's, and attempted to render dogs amphibious, by plunging puppies in lukewarm water, soon after birth, and removing them, from time to time. It is perhaps needless to add, that he failed. Continuing the argument, however, from where we arrested him, Gough says, "the preceding suggestion will not appear absurd to those who view torpidity in the light it is here represented, I mean, as a periodical custom of prolonging sleep to an unusual length, the respiration at the same time becoming slow and feeble, and the heat of the body diminishing in consequence. Some singular anomalies in the history of man himself may be said to answer, in part, to the foregoing description, and to indicate an incipient propensity to become torpid, under

certain circumstances. There are instances of great insensibility, arising from the operation of causes on the system, which have an evident tendency to destroy the vital power, or which, to speak more properly, incapacitate the brain to generate this power, in sufficient quantity to supply the various demands of the voluntary and involuntary muscles: the little that is produced being expended on those operations of the economy which are absolutely necessary for the continuance of life. Dr. Plot relates the case of a poor girl, eight years old, who, being beaten by a severe step-mother, and sent hungry with some refreshments to her father in the fields, could not refrain from eating part of them. Reflecting afterwards on the probable consequences of her conduct, she proceeded no further on her way, but retired to a neighbouring wood and there fell into a profound sleep, being oppressed with fear and sorrow: in this state she remained for seven days, and, when discovered, showed no symptoms of life, besides the softness of her flesh and the flexibility of her joints. Dan. Ludovicus, from whom Dr. Plot borrows this relation, happened to be present, and succeeded in his attempts to recover this poor creature. He first washed a glutinous phlegm from her face with warm water, and cleared her mouth and nostrils from a viscid substance that obstructed them: a few spoonfuls of brandy were then administered; after the second she was heard to groan, after the third she opened her eyes, and so came at length to herself, by degrees. The same author has also preserved another instance of a sleeper, in the circle of his own acquaintance. This is the history of Mary Foster, of Admaston. She remained in a profound sleep, for fourteen days and nights, after an equal

period of fear and anxiety, occasioned by her falling casually into a well; and the accident seems to have produced in her a disposition to torpor; for, two years after, she slept two nights and a day, at Uttoxeter."

The same author, Gough, in a supplementary article, quotes the experiment successfully made by Pallas, and mentioned by Cox, in his Travels in Russia, of Pallas conquering the torpid habit of the marmot, by confining it through winter to a warm stove, and giving it a plentiful supply of food. The history of the earless marmot also, ARCTOMYS CITILLUS, he contends, establishes the general proposition, that torpidity is a habit, and not a necessary propensity. "These animals imitate the manners of the hearth-cricket; for those that burrow in the fields fall asleep about the end of September, and appear again with the first symptoms of spring; but, when the same quadruped finds its way into a granary, it remains active all the winter." And, in conclusion, he thinks that the experiment on the dormouse appears to throw a light on the nature of the torpidity; namely, that a liberal use of nutritious food will, in time, enable this animal to support a degree of cold much severer than that which benumbs the same creature, when wild and habituated to a meagre diet. He infers, therefore, that the torpidity of the dormouse arises from the united operations of cold and hunger, but thinks that future observations must determine how far other hibernating animals are influenced by diet, before we can pronounce the preceding explanation of torpidity to be general.

For the following lucid arrangement of nearly all the known facts connected with hibernation, we are indebted to that valuable and very learned work of Dr. Elliotson,

HUMAN PHYSIOLOGY. The phenomena of hibernating animals, says the doctor, which grow dull on the approach of winter, and at length fall asleep, continuing so till the return of mild weather, and generally endeavouring to be as little exposed to noise, motion, and all causes of excitement, and to lose as little heat during the approach of cold, as possible, by coiling themselves up, and getting into holes and warm situations, covering themselves with leaves, etc. (and all the class of animals, except birds, contain species that have the faculty of living in this state,) are precisely analogous, though very different in degree, to those of common sleep. The sensibility and all the functions are lessened, the temperature becomes nearly as low as that of the surrounding medium, the circulation slow, respiration almost or quite imperceptible, and digestion suspended. Although all activity is thus reduced in the hibernating state, vitality becomes more tenacious—is less easily extinguished. Mangili cut off the head and neck of a marmot, in the state of hibernation, in March, and put it in spirits, yet movements were evident in it at the end of half an hour, and galvanism produced strong contractions, in pieces of voluntary muscles, three hours after they had been cut off; and even FOUR elapsed before their excitability was much diminished. The heart beat for three hours after decapitation.

He made the same examination, in June, with a marmot, which had been out of hibernation two months; the muscles showed little excitability under galvanism at the end of TWO hours, and the heart ceased to beat in fifty minutes after decapitation. (ANNALES DE MUSEUM, t. 10. p. 453. sqq.) This is what we should have expected. The augmented tenacity of life, which allows

food, air, and heat, to be dispensed with, in whole or in part, is likely to pervade the muscles, and indeed every part of the frame, just as the necessity for air, food, and heat, is in all other cases proportionate to the want of tenacity of excitability in muscles and of all vital properties. The sensibility is not so diminished but that "the slightest touch, applied to one of the spines of the hedgehog, immediately roused it to draw a deep and sonorous inspiration; the merest shake" induces a few respirations in the bat. (DR. MARSHALL HALL, PHIL. TRANS. 1832.)

This torpidity is produced by a DEFICIENCY of external excitants, usually by cold and want of food, and, in the language of Brown, is a state of direct debility, while our ordinary sleep is one of INDIRECT debility—exhaustion. No structural peculiarity is discoverable, which enables certain animals to exist in the torpid state.

Such animals, at all times, produce less heat, and vary more with the surrounding medium, than others, so that Dr. Edwards, in an hour, cooled a dormouse eighty-six degrees, by surrounding it with a freezing mixture, which caused a reduction of not more than five or six degrees, in adult birds and guinea-pigs, exposed to it for a longer period. Some, which do not hibernate, resemble them in this inferior power—mice, for example; which therefore, at all ages and seasons, make themselves nests. On the other hand, hibernating animals are not all equally deficient, in the power of resisting the influence of surrounding low temperatures; dormice are the most so, marmots the least; so that animals which preserve their own temperature in low media, and those which readily follow the surrounding temperature, are not widely separated,

but insensibly run into each other, to say nothing of the inferior power of the newly-born, among many of the former, and among all, if born before the full time, and of the various degrees of this power, in different adults, and, in all, at different seasons of the year. Cold produces sleep in all, and, if the sleep is indulged, death is the result, in those which cannot hibernate: those which can, become more and more torpid, by the mere continuance of the same degree of cold. A very intense degree of cold has been found actually to arouse animals in a state of torpidity, but the excitement of the functions could not continue long, and death ensued. It appeared necessary that respiration should be suspended, in an experiment of M. De Saissy, who, by mere cold, could not produce torpor in a marmot, till he closed the lid of the vessel in which it was placed. Hence, exposure to carbonic acid, hydrogen, etc., in this state, was found by Spallanzani to have no ill effect upon a torpid marmot. (RAPPORTS DE L'AIR, t. 2. p. 207.) Yet respiration has often seemed not to cease entirely. (See Dr. Reeve, ESSAY ON THE TORPIDITY OF ANIMALS.) The blood has been found, in some degree, coagulated in torpid bats. (Hunter, ON THE BLOOD, p. 25.) Cold, at any time of the year, will produce the torpid state, but want of food must greatly assist in lessening the power of maintaining temperature. On the other hand, a continual good supply of food and warm temperature increases their power of evolving heat, and enables them to resist the power of cold, so that, by domestication, some cease to hibernate in the winter. (Dr. Edwards, l. c. p. 472.) Dr. Edwards found that the temperature of hibernating animals sink considerably during sleep, even in summer.

Fish and other cold-blooded animals will survive an immense torpidity. "The fish froze," says Captain Franklin, "as fast as they were taken out of the net, and in a short time became a solid mass of ice, and, by a blow or two of the hatchet, were easily split open, when the intestines might be removed in one lump. If, in this completely frozen state, they were thawed before the fire, they recovered their animation. We have seen a carp recover so far as to leap about with much vigor, after it had been frozen six-and-thirty hours!" (JOURNEY TO THE POLAR SEA, p. 248.) Izaak Walton (THE COMPLETE ANGLER, p. 257,) quotes Gessner for the fact of some large breams being put into a pond, which was frozen, the next winter, into one mass of ice, so that not one could be found, and all swimming about again when the pond thawed in the spring—"a thing almost as incredible," says the sentimental sinner, as Lord Byron calls him, "as the resurrection of an atheist."

Insects easily bear torpidity from cold. In Newfoundland, for example, Captain Buchan saw a frozen lake, which in the evening was all still and frozen over, but, as soon as the sun had dissolved the surface in the morning, was in a state of animation, owing, as appeared by close inspection, to myriads of flies let loose, while many still remained "infixed and frozen round." Ellis also mentions that a large black mass, like coal or peat, upon the hearth, dissolved, when thrown upon the fire, into a cloud of musquitoes. (QUARTERLY REVIEW, April, 1821, p. 200.)

Those insects which hibernate are not thought, by Kirby and Spence (ENTOM. vol. ii. p. 460. sqq.), to prepare for and enter into that state, solely from cold, etc.,

as they do so when the season comes round, although the weather be as warm as previously, and do not, before this period, though the temperature chance to be as low as it usually is in the season of hibernation.

Some animals become torpid on being deprived of moisture—the most simple infusoria, rotifera, and vibriones, for instance. A common garden-snail falls torpid, if put into a dry place, and may be revived, at any time, by the application of a little water. Moisture has revived some animalcules after a torpidity of twenty-seven years. (SPALLANZANI, OPOSCALI DI FISICA ANIMALE E VEGETABILE.) The same is true of some of the most simple vegetables, as mosses. The microscopic wheel-animal, after remaining three or four years as a shrivelled point, capable of being broken to pieces, like a crystal of salt, is still recoverable by a drop of water; and the eel of blighted corn (vibrio), after twenty or thirty years. Yet electricity destroys their capability of resuscitation. Most vegetables become torpid in winter. Many lichens and mosses, dried in herbaria, have been restored to life, by moisture, after a century or two. Seeds and bulbs, which have remained for centuries in the bowels of the earth, have sprung into life, on being thrown into a more congenial soil; and bulbs, taken from the hand of a mummy found in one of the pyramids, after having been immured between two and three thousand years, produced unknown plants, when sown in one of our Botanic Gardens! (DR. FLETCHER, l. c. p. 2, b. p. 144.)

A similar fact is observed in clearing new lands in Jamaica. Wherever this is done, the oil-nut (Ricinus Communis), springs up in great profusion, and sometimes of a different species from that common in the immediate

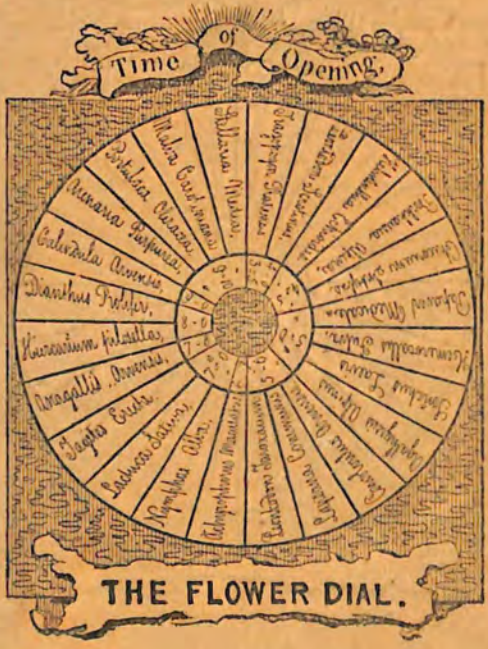
neighbourhood. And we have seen, also, exotic plants appear in newly-turned earth, which had been a flower-garden forty or fifty years before.

As we have now exhausted the subject of hibernation, it will not perhaps be altogether misplaced, if we include in this chapter, the few observations we intend to make on THE SLEEP OF PLANTS. This is a condition of vegetable individual life, which is not strictly analogous to sleep in animals, but presenting some of its phenomena, naturalists, desiderating an appropriate word, have given it the name of SLEEP. Linnæus, with that exility of mind which distinguished him among his contemporaries, was the first to observe it. Nor do we wonder at it. Flowers were his playthings, physical objects his companions, and nature his instructor. He delighted to roam over meadows, and saunter through groves; or, reclining on the bank of some meandering stream, to picture to himself the loves of the flowers, imagine their inﬁetation, depict their growth, and calculate their maturity. Hence he observed that several families of plants, wearied with the labor of assimilation, or drunk with the exuberance of light, at stated periods, folded their leaves or leaflets upon themselves, and sunk into an indolent repose, or, as botanists describe it, bending the leaf-stalk upwards or downwards, elevated or depressed the flattened surface of their leaves. "This," he exclaimed, "is the Sleep of Plants." Of those, which are usually quoted as possessed of this property, we may mention the Oxalis, Hedysarum Gyrans, the Campion tribe, Tragaponum Luteum, Convolvulus, Marvel of Peru, Broom, Tulip, and Dianthus. In tropical climates, most plants appear to sleep, but that which is particularly

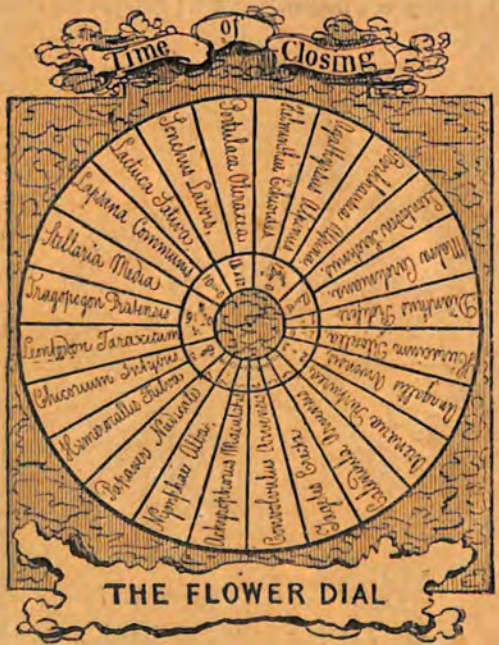
distinguished for this property of repose, is the Mimosa Pudica, or Sensitive Plant of Jamaica. In the northern parts of that island, especially about Lucea, in May and June, it may be seen in prodigal profusion, overrunning whole acres. In this district, about noon, or when the sun sheds what Goldsmith calls "intolerable day," you will observe a vast surface, covered as it were with dead plants, while the luxuriant Balmma grass, sending up its tiny blades on every side, and through every available interstice made by the collapsed mimosa's little leaves, looks the hot day boldly in the face. This is the sleep of the "Dead-and-awake"—the negro name for the plant. The duties of organization have fatigued—the exestuative heat of the sun has exhausted it,—it has laid its leaflets on the pillow of the footstalk, to sleep away the burning noon! But, when the red sun shall sink behind the lofty summits of the deep-green hills, and the languid Sea-Breeze decline upon his ocean-couch, the Spirit of the Land-Wind will arise, redolent with the perfume of the pimento, the jasmine, and the night-sweetening Wild Pine, and touch gently with his balmy lips his slumbering bride. Then the leaflets will lift up their heads again, the footstalks extend their fairy limbs, and the orb-like flowers awake, look out, and welcome back their truant love! Such is the order of the succession of repose and slumber of the mimosa.

Similar phenomena are observable in the flower of a plant, also common in Jamaica—Hibiscus Mutabilis. In the morning it is a pale French white, at noon it is a delicate pink, and, as the sun declines, it wears a rich suit of crimson hue. This is the successive slumber of the coloring matter of the flower of the Changeable Rose. How

like the states of womanhood! The maid all purity; the wife all hope; the matron all possession! The gallant Captain Chamier has addressed some beautiful lines to this flower, which we regret we cannot at this moment recollect, or we would insert them. They are worthy of the interesting flower he sought to illustrate. Linnæus, on whom nothing was lost, who, like Xerxes, could see a divinity in a tree, and could fall down on his knees


Time of Opening.
Hieracium Pilosella.
Anagallis Arvensis.
Dianthus Prolifer.
Calendula Arvensis.
Convolvulus Arvensis.
Silene Noctiflora.
Lapsana Communis.
Sonchus Oleraceus.
Crepis Tectorum.
Leontodon Taraxacum.
Hieracium Auricula.
Hieracium Umbellatum.
Sonchus Arvensis.
Tragopogon Pratense.
Hieracium Murorum.
Lactuca Sativa.
Hieracium Sabaudum.
Hieracium Boreale.
Hieracium Prenanthoides.
Lactuca Virosa.
Lactuca Scariola.
Lactuca Saligna.
Lactuca Perennis.
Sonchus Palustris.
Sonchus Alpinus.
Crepis Paludosa.
Crepis Virens.
Crepis Succisæfolia.
Crepis Biennis.
Hieracium Paludosum.
Hieracium Alpinum.
Hieracium Cerinthoides.
Hieracium Virosum.
Hieracium Scorzonerifolium.
Hieracium Glaucum.
Hieracium Amplexicaule.
Hieracium Aurantiacum.
Hieracium Dubium.
Hieracium Pulmonarioides.
Hieracium Villosum.
Hieracium Prenanthoides.
Hieracium Sylvaticum.
Hieracium Vulgatum.
Hieracium Umbellatum.
Hieracium Boreale.
Hieracium Murorum.
Hieracium Auricula.
Hieracium Pilosella.
Tragopogon Pratense.
Leontodon Taraxacum.
Lactuca Sativa.
Lactuca Saligna.
Lactuca Perennis.
Lactuca Virosa.
Lactuca Scariola.
Sonchus Palustris.
Sonchus Alpinus.
Sonchus Arvensis.
Sonchus Oleraceus.
Crepis Tectorum.
Crepis Virens.
Crepis Succisæfolia.
Crepis Biennis.
Crepis Paludosa.
Lapsana Commun

in adoration of the yellow furze of our commons, deeming this property of plants might be turned to some useful purpose, with wonderful ingenuity and commendable patience, constructed his "Flower Dial." However, as his was calculated for the meridian of Upsal, it is useless in Britain, we therefore present the preceding and succeeding, according with the meridian of Greenwich.



CHAPTER VII.

SOMNAMBULISM.—IN WHAT MANNER IT DIFFERS FROM CATALEPSY.—CASE FROM GALL OF A STUDENT.—OF A MILLER WHO ROSE AT NIGHT AND GROUND HIS CORN.—OF AN AMERICAN FARMER WHO WORKED WITH THE FLAIL DURING HIS SLEEP.—OF A DROVER, WHO KILLED AND QUARTERED A SHEEP IN A FIT OF SOMNAMBULISM.—OF A SADDLER WHO WORKED IN HIS SLEEP.—DR. BLACKLOCK ROSE IN HIS SLEEP, CONVERSED WITH HIS FAMILY, SUNG A SONG, AND THEN RETIRED TO BED AGAIN, WITHOUT BEING AWARE OF IT.—DR. HAYCOCK OF OXFORD PREACHED FREQUENTLY IN HIS SLEEP.—CASE FROM HORSTIUS OF A YOUNG NOBLEMAN PERFORMING AN EXTRAORDINARY FEAT IN HIS SLEEP.—FRANKLIN SWAM IN HIS SLEEP.—A SIMILAR CASE IN DUBLIN.—CURIOUS CASE FROM THE LANCET. CASES FROM DR. PRITCHARD.—CASE OF CASTELLI, WHO STUDIED IN HIS SLEEP.—CASE OF A SLEEP-WALKER ON BOARD A VESSEL OF WAR, TERMINATING FATALLY.—OTHER CASES FROM ISIS REVELATA.—LORD CULPEPPER'S BROTHER COMMITS MURDER IN A FIT OF SOMNAMBULISM.—DR. DARWIN'S CASE OF A YOUNG LADY.—DR. ELLIOTSON'S REMARKS ON PARTIAL TORPIDITY, AND PARTIAL EXCITEMENT IN VARIOUS POINTS OF THE BRAIN, IN RELATION TO EXTERNAL OBJECTS.—GALL ON SOMNAMBULISM.—VERY SINGULAR CASE, BY DR. DYER OF ABERDEEN.

Somnambulism is a condition of the body still more curious than hallucination, trance, or reverie, but is analogous to catalepsy, particularly to the case we have related from Mason Good, of the student of Gray's Inn. It however, differs from catalepsy, by generally appearing at night, and is besides unaccompanied with rigidity of the muscles. Besides, in catalepsy, speech is absent; whereas it is frequently present in somnambulism, and hence somnambulists have been made to reveal their

most secret thoughts. Richerand considers, that "this fact may be cited in proof of the error of the senses, and of the need there is to correct them by one another." We think it irrefragable evidence of the duplicity of the cerebral organs, and not an "error" at all. But of this we shall speak by-and-by, when we come to cases of double consciousness. The following is quoted by Dr. Elliotson from Gall. "At Berlin a young man, sixteen years of age, had extraordinary attacks from time to time. He was agitated in his bed without consciousness; his movements and gestures shewed a great activity of many internal organs; whatever was done to him, he did not perceive it; at length he jumped out of bed and walked hastily in the apartment. His eyes were then fixed and open. I placed different obstacles in his way, which he removed with his hand, or carefully avoided; then he threw himself suddenly on his bed, was agitated there sometime, and at length awoke and sat up, very much astonished at the number of curious persons who were about him." The next case is also from the same author.

"M. Joseph de Roggenbach, at Fribourg, in Brisgan, told me, in the presence of many witnesses, that he had been a somnambulist from his infancy. In this state his tutor had frequently made him read; made him look for places on the map, and he found them more readily than when awake; his eyes were always open and fixed; he did not move them, but turned his whole head. Many times they held him, but he felt the restraint, endeavoured to liberate himself, but did not wake; sometimes he said he should wake, if they led him into the garden, and this always happened."

There is also the case of a miller mentioned by this

author, who, in his sleep, would go to his mill, busy himself in his daily occupation, then return to bed again, without remembering in the morning anything he had done in the night. A friend related to us, that a master drover, a connexion of hers, rose in his sleep, slaughtered a sheep, and quartered it like a butcher. The fact was discovered by the blood on his night-shirt. M. Martinet relates of a saddler, that he rose in his sleep and worked at his trade (BIBLIOTHEQUE MEDICALE); and Professor Upham, of America, records the case of an American farmer, who would rise in his sleep, go to his barn, thresh out five or six bushels of rye in the dark, and separate the grain from the straw with great exactness. (ISIS REVELATA.)

Dr. Blacklock, the blind poet, on one occasion, Macnish says, rose from his bed, to which he had retired at an early hour, came into the room where his family were assembled, conversed with them, and afterwards entertained them with a pleasant song, without any of them suspecting he was asleep, and without his retaining, after he awoke, the least recollection of what he had done.—Dr. Haycock, professor of medicine at Oxford, would deliver a good sermon in his sleep; nor could all the pinching and pulling of his friends prevent him. Horstius mentions a young nobleman, who was observed by his brother to rise in his sleep, put on his cloak, open the casement, mount by a pulley to the roof of the citadel of Brenstein, where he was, tear a magpie's nest to pieces, wrap the young ones up in his cloak, return to his room, place the cloak with the birds in it near him, and go to bed. In the morning he told the adventure as a dream, and was astonished when shown the magpies in his cloak,

and, when led to the roof, he beheld the remains of the nest. (HUMAN PHYSIOLOGY.)

These cases are wonderful, and excite our speculation, but what will be thought of the feats of sleep-floating and sleep-swimming, as told, in the one instance, by Dr. Franklin of himself, and in the other, related of a man in Ireland by Macnish? "I went out," says Franklin, "to bathe in Martin's salt-water hot-bath in Southampton, and, floating on my back, fell asleep, and slept nearly an hour by my watch, without sinking or turning—a thing I never did before, and should hardly have thought possible."—"About two o'clock in the morning," says Macnish, "the watchmen on the revenue quay, were much surprised on descrying a man disporting himself in the water, about 100 yards from the shore. Information having been given to the revenue-boat's crew, they pushed off, and succeeded in picking him up; but, strange to say, he had no idea of his perilous situation, and it was with the utmost difficulty they could persuade him he was not in bed. But the most singular part of this novel adventure, and which was afterwards ascertained, was, that the man had left his house at twelve o'clock at night, and walked through a difficult and to him dangerous road, a distance of nearly two miles, and had actually swam one mile and a half, when he was fortunately discovered and picked up."

In the first volume of THE LANCET will be found the following strange narration:—A lad, named George David, sixteen years old, in the service of Mr. Hewson, a butcher in Bridge Road, Lambeth, at about twenty minutes past nine, bent forward in his chair, and rested his forehead on his hands, and in ten minutes started up, sought for his whip, put on one spur, and went

thence into the stable; but not finding his own saddle in the proper place, he returned to the house and demanded it. Being asked what he wanted with it, he replied, to go his rounds. He returned to the stable, got on the horse without the saddle, and was proceeding to leave the stable. It was with much difficulty that Mr. Hewson, junior, assisted by the other lad, could remove him from the horse: his strength was great, and it was with difficulty that he was brought in doors. He considered himself as stopped at the turnpike-gate, and took sixpence out of his pocket to be changed; and, holding out his hand for the change, the sixpence was returned to him. He immediately observed, "None of your nonsense, that is the sixpence again; give me my change." When twopence-halfpenny was given to him, he counted it over, and said, "None of your gammon, that is not right; I want a penny more," making the threepence-halfpenny, which was the proper change. He then said, "Give me my castor" (meaning his hat), which slang term he had been in the habit of using, and then began to whip and spur to get his horse on. His pulse was at this time 136, full and hard; no change of countenance could be observed, or any spasmodic affection of the muscles; the eyes remaining close the whole of the time. The boy was blooded; and, during the time of bleeding, Mr. Hewson related a circumstance of Mr. Harris, optician, in Holborn, whose son, some years since, walked out on the parapet of the house in his sleep. The boy joined the conversation, and observed, "he lived at the corner of Brownlow Street." After the arm was tied up, he unlaced one boot, and said he would go to bed. In three minutes from this time he awoke, got up, asked what

was the matter, (having been then one hour in the trance), not having the slightest recollection of anything that had past, and wondered at his arm being tied up and at the sight of blood.

Dr. Elliotson gives a very remarkable case of habitual somnambulism, in a man by the name of Green; but we must content ourselves by merely referring the reader to the Doctor's elaborate and masterly work on HUMAN PHYSIOLOGY, or to ISIS REVELATA, by Mr. Colquhoun.

The following case of an Italian nobleman, is related by Muratori, and will be found in Dr. Pritchard's work on Insanity. "An Italian nobleman, named Augustin Forari, was subject to sleep-walking, and on one occasion was watched by a Signor Vigneul Marville, who gave the following account:—One evening, towards the end of October, we played at various games after dinner: Signor Augustin took a part in them, along with the rest of the company, and afterwards retired to repose. At eleven o'clock his servant told us, that his master would walk that night, and that we might go and watch him. I examined him sometime after with a candle in my hand; he was lying on his back, and sleeping with open staring eyes. We were told that this was a sure sign that he would walk in his sleep. I felt his hands and found them extremely cold, and his pulse beat so slowly that his blood appeared not to circulate. We played at backgammon until the spectacle began. It was about midnight, when Signor Augustin drew aside his bed-curtains with violence, arose, and put on his clothes. I went up to him, and held the light under his eyes. He took no notice of it, although his eyes were open and staring. Before he put on his hat, he fastened on his

sword-belt, which hung on the bed-post; the sword had been removed. He then went in and out of several rooms, approached the fire, warmed himself in an arm-chair, and went thence into a closet where was his wardrobe. He sought something in it, put all the things into disorder, and having set them right again, locked the door and put the key into his pocket. He went to the door of the chamber, opened it, and stepped out on the staircase. When he came below, one of us made a noise by accident; when he appeared frightened, and hastened his steps. His servant desired us to move softly, and not to speak, or he would become out of his mind; and sometimes he ran as if he were pursued, if the least noise was made by those standing around him. He went into a large court and to the stable, stroked his horse, bridled it, and looked for the saddle to put on it. As he did not find it in the accustomed place he appeared confused. He then mounted his horse and galloped to the house door. He found this shut; dismounted, and knocked several times at the door with a stone which he had picked up. After many unsuccessful efforts he remounted, and led his horse to the watering-place, which was at the other end of the court, let it drink, tied it to a post, and went quietly to the house. Upon hearing a noise, which the servants made in the kitchen, he listened attentively, went to the door, and held his ear to the key-hole. After some time he went to the other side, and into a parlour, in which was a billiard-table. He walked round it several times, and acted the motions of a player. He then went to a harpsichord, on which he was accustomed to practise, and played a few irregular airs.

After having moved about for two hours, he went to his room, and threw himself on his bed in his clothes, and we found him in them the next morning; for after his attacks he always slept eight or ten hours. The servants declared, they could put an end to the paroxysms only either by tickling his soles, or blowing a trumpet in his ear." (L. A. MURATORI, DELLA FORZA DELLA FANTASIA UMANA. Venezia, 1766.)

Dr. Francisco Soave relates the case of one Castelli, the pupil of an Italian apothecary. Castelli was found asleep one night, translating Italian into French, and looking out the words in a dictionary. They put out his candle, when he, finding himself in the dark, began to grope for it, and went to light it at the kitchen-fire, though other candles were alight in the room. At other times he had come down in the shop and weighed out medicines, and talked to supposed customers. When any one conversed with him on a subject on which his mind was bent, he gave rational answers. He had been reading Macquer's Chemistry, and somebody altered his marks. This puzzled him; and he said "Bel piacere di togliermi i segni." He found his place and read aloud, but his voice growing fainter, his master told him to raise it, which he did. Yet he perceived none of the persons standing around him; and though he heard, says Dr. Soave, any conversation which was in conformity with the train of his ideas he heard nothing of the discourse which these persons held on other subjects. His eyes seemed to be very sensible to objects relating to his thoughts, but appeared to have no life in them, and so fixed were they, that when he read, he was observed not to move his eyes, but

his whole head from one side of the page to the other. (REFLESSIONI SOPRA IL SOMNAMBOLISMO: DI FRANCESCO SOAVE.)

A naval gentleman relates the following case: "When on a voyage to New York, we had not been four days at sea, before an occurrence of a very singular nature broke our quiet. IT WAS A GHOST! One night, when all was still and dark, and the ship rolling at sea, before the wind, a man sprung suddenly on deck in his shirt, his hair erect, his eyes starting from their sockets, and loudly vociferating that he had seen a ghost. After his horror had a little subsided we asked him what he had seen? He said he saw a figure of a woman dressed in white, with eyes of flaming fire; that she came to his hammock and stared him in the face. This we treated as an idle dream, and sent the frantic fellow to his bed. The story became the subject of every one; and the succeeding night produced half a dozen more terrified men, to corroborate what had happened the first; and all agreed in the same story, that it was a woman. The rumour daily increasing, at length came to the ears of the captain and officers, who were all equally solicitous to discover the true cause of this terrific report. I placed myself night by night beneath the hammocks, to watch its appearance, but all in vain; yet still the appearance was nightly, as usual, and the horrors and fears of the people rather daily increased than diminished. A phantom of this sort rather amused than perplexed my mind; and when I had given over every idea of discovering the cause of this strange circumstance, and the thing began to wear away, I was surprised one very dark night, as seated under the boats, with a stately figure in white

stalking along the decks! The singularity of the event struck my mind, that this must be the very identical ghost which had of late so much disturbed the ship's company. I therefore instantly dropped down, from the place I was in, to the deck, on which it appeared, when it passed immediately very quickly, turned round and marched directly forwards. I followed it closely, through the gallery, and out at the head-doors, when the figure instantly disappeared, which very much astonished me. I then leaped upon the forecastle, and asked of the people who were walking there if such a figure had passed them? They replied, No! with some emotion and pleasure, as I had ever ridiculed all their reports on this subject. However, this night's scene between me and the ghost became the theme of the ensuing day. Nothing particular transpired till twelve o'clock, when, as the people were pricking at the tub for their beef, it was discovered, Jack Sutton was missing. The ship's company was directly mustered, and Jack was no where to be found. I then enquired of his messmates the character of the man; and, after a number of interrogatories, one of them said, that Jack Sutton used to tell them a number of comical jokes about his walking in his sleep. Now the mystery was unravelled; and this terrific ghost, which had so much alarmed all the sailors, now proved to be the unfortunate poor Jack Sutton, who had walked overboard in his dream.

"The first fellow who spread this report, and who shewed such signs of horror, was found on inquiry to be a most flagitious villain, who had murdered a woman, who he believed always haunted him; and the appearance of this sleep-walker confirmed in his mind the ghost of the

murdered fair one; for, in such cases, conscience is a busy monitor, and ever active to its own pain and disturbance."

We have other cases terminating fatally, thus shewing that that superior intellectual vigor, which some have supposed to be present in dreams and somnambulism, is but ideal; and that dreams and somnambulism, so far from being perfect states, or conditions of freedom of THE SOUL from the bonds of matter, are but very imperfect developments indeed of the reasoning powers, which would not be the case, if the reasoning powers were totally independent of the material organs. Thus Macnish speaks of a young lady, who walked into a garden in a fit of somnambulism, and being awakened by one of the family, who had followed her, the shock was so sudden, that she almost instantly expired. In the ISIS REVELATA we find the case of a young lady of Dresden, who, awakened by a light placed by one of the family in a window, out of which she had got upon the roof, instantly fell to the ground, and was killed on the spot. Again we have other cases, where all reason and common sense seem to have slept, while brutal violence and wanton cruelty reigned triumphant. For example, in 1686, Lord Culpepper's brother was indicted at the Old Bailey, for shooting one of the guards and his horse. He pleaded somnambulism, and was acquitted, on producing ample evidence of the extraordinary things he did in his sleep. There is a somewhat similar story of a French gentleman, who rose in his sleep, crossed the Seine, fought a duel, and killed his antagonist, without recollecting any of the circumstances when awake.

Dr. Darwin relates the case of a young lady, about seventeen years of age, who, every day, for five or six

weeks, had fits of violent convulsions, then retchings, next equally violent hiccups, then tetanus, and at last Sleep-walking; becoming insensible, yet singing, quoting whole passages of poetry, and holding conversations with imaginary persons, and coming to herself with great surprise and fear, but with no recollection of what had happened. At length she could walk about the room in the fit, without running against the furniture, and evidently had some external sense; for she took a cup of tea, and expressed a fear that there was poison in it; and seemed to smell at a tuberose, and deliberated about breaking the stem, as it would make her sister so charmingly angry; once heard a bell, was less melancholy when the shutters were open, and impatient if a hand was held over her eyes, or her hands were held down, saying "She could not tell what to do, as she could neither see nor move."

Dr. Elliotson remarks that though partial torpidity and partial excitement, of various degrees and in various points of the brain, and excitement in relation to various individual external objects, and some derangement of the natural sensibility, may explain all the cases described, some persons explain many of the phenomena by the operation of a new sense diffused throughout the surface, but most intense at the epigastrium and fingers; but we do not see any necessity for supposing a new sense, any more than assuming, with Glanvil, More, Beaumont, Cardan, Porphyrius, and other psychologists, that an epileptic, or somnambulist, is possessed of a spirit, demon, or attendant angel.

This is what Gall says upon the subject, and is it not conclusive?

"There are somnambulists who see, and the opinion of certain visionaries, who think that the perception of external objects takes place in somnambulists only by the internal senses, is repeated. Experience proves that somnambulists who have their eyes shut hit themselves when objects unknown to them are placed in their way."

This is proved by the case, quoted by Dr. Elliotson from Rigellini and Pigatti, of a man-servant named Regretti. He laid the table, waited, and put the things away, by habit, and in places to which he had been accustomed shewed no confusion—whereas, in a place of which he had no distinct knowledge, he felt with his hands all around, and shewed much inaccuracy. Galen also states, that he walked about in his sleep a whole night, and only awoke by striking against a stone that happened to be in his way.

"When, with their eyes shut, somnambulists find themselves in a place familiar to them, they grope their way like blind people, by the aid of local memory. Just as the eye and ear may be awake in dreaming, so may the external senses. We perceive exhalations that surround us; we recognize a bitter or a sweet taste of saliva after a bad digestion; we feel heat, cold, etc. Some persons think that somnambulism is a completely extraordinary state, because somnambulists execute during their sleep things which they could not accomplish awake: they clamber on trees, roofs, etc. All astonishment ceases as soon as we reflect upon the circumstances in which we do the boldest things, and upon others in which we cannot. Any one in a balcony, furnished with a balustrade, could look down from a very high tower, and without resting against this balustrade. We walk without tottering

upon a plank placed upon the parquet. To what will not boys accustom themselves in their rash sports? What do not mountaineers in the pursuit of the chamois, rope-dancers, tumblers, and others, perform? But take the balustrade from the balcony. Let us but discover an abyss to the right and left of the plank, and we are lost. Why? Is it because we are not in a condition to walk upon the plank? No. It is because fear destroys our confidence in our powers. Now let us judge of the somnambulist. He sees distinctly what he is about to do, but the organs which would warn him of the danger are asleep: he is therefore without fear, and executes whatever his bodily powers allow him successfully to attempt. But wake him: instantly he will perceive his danger and give way." (GALL.)

The following is one of the most remarkable cases on record, and is considered by Spurzheim, as presenting phenomena very much akin to those, we shall presently notice, as occurring in mesmerism, or artificial somnambulism: "Dr. Devan read to the Royal Society of Edinburgh, in February, 1822, the history of a case, observed by Dr. Dyer of Aberdeen, in a girl 16 years old, which lasted from the 2nd March to the 11th June, 1815. The first symptom was an uncommon propensity to fall asleep in the evenings. This was followed by the habit of talking in her sleep on those occasions. One evening she fell asleep in this manner: imagining herself an episcopal clergyman, she went through the ceremony of baptizing three children, and gave an appropriate prayer. Her mistress shook her by the shoulders, on which she awoke and appeared unconscious of every thing, except that she had fallen asleep, of which she shewed herself ashamed.

She sometimes dressed herself and the children while in this state, or, as Miss L. called it, 'dead sleep'; answered questions put to her in such a manner as to shew that she understood the questions; but the answers were often, though not always, incongruous. One day in this state she sat at breakfast, with perfect correctness, with her eyes shut. She afterwards awoke with the child upon her knees, and wondered how she got on her clothes. Sometimes the cold air awakened her; at other times she was seized with the affection whilst walking out with the children. She sang a hymn delightfully in this state; and, from a comparison Dr. Dyer had an opportunity of making, it appeared incomparably better done than she could accomplish it when awake. In the meanwhile a still more singular and interesting symptom began to make its appearance. The circumstances which occurred during the paroxysm were completely forgotten by her when the paroxysms were over, but were perfectly remarked during subsequent paroxysms. Her mistress said that when in this stupor, on subsequent occasions, she told her what was said to her on the evening when she baptized the children. A depraved fellow-servant, understanding that she wholly forgot every transaction that occurred during the fit, clandestinely introduced a young man into the house, who treated her with the utmost rudeness, whilst her fellow-servant stopped her mouth with the bed-clothes, and otherwise overpowered a vigorous resistance which was made by her even during the influence of her complaint. Next day she had not the slightest recollection even of that transaction; nor did any person interested in her welfare know of it for several days, till she was in one of her paroxysms, when she re-

lated the whole fact to her mother. Next Sunday she was taken to church by her mistress, while the paroxysm was on her. She shed tears during the sermon, particularly during the account given of the execution of three young men at Edinburgh, who had described in their dying declarations, the dangerous steps with which their career of vice and infamy took its commencement. When she returned home, she recovered in a quarter of an hour, was quite amazed at the questions put to her about the church sermon, and denied that she had been to any such place; but next night, on being taken ill, she mentioned that she had been at church, repeated the words of the text, and, in Dr. Dyer's hearing, gave an accurate account of the tragical narration of the three young men, by which her feelings had been so powerfully affected." (SPURZHEIM.)

These are a very small portion indeed of the immense number of authenticated cases on record; but, it is presumed they will be sufficient to establish the opinion, which we have throughout entertained, of the partial sleep of the brain, in all those affections, which have hitherto been attributed to Divine interposition, to evil spirits, demons, or guardian angels. The cases narrated prove, that so far from somnambulists being endowed with any faculty superior to that of the waking state, they fall far short of it; though the organs which are put in action, in consequence of the repose of the others, possess for the time a concentrativeness of power, which they do not exhibit when collectively awake. This has been so ably, acutely, and satisfactorily explained by Gall, that we shall not detain our readers with additional remarks, but proceed at once to CATALEPSY.

CHAPTER VIII.

CATALEPSY.—ITS EXISTENCE DISBELIEVED BY CULLEN.—VAN SWIETEN.—GALEN.—PRAXAGORAS.—ANTIGENES.—ASCLEPIADES.—CELSUS.—FORESTUS.—GOOD.—DUNCAN.—A CASE NEARLY FATAL.—MACNISH'S DAY-MARE.—POLYDORI.—GOOCH.—REMARKABLE CASE.—DR. JOY.—HELENA RENAULT.—DR. JEBB.—PETETIN.—CLAIRVOYANCE.—DR. JOY'S OPINION.—CASES FROM DR. ABERCROMBIE'S WORKS.—DARWIN.—CATALEPTIC STUDENT OF GRAY'S INN.—NICOLAI'S SPECTRES.—ECSTASY.—DEFINITION.—SAUVAGES.—ST. TERESA.—DR. FERRIAR.—KOTTER, THE GERMAN PROPHET.—CASE FROM DR. HIBBERT.—ECSTATICA OF CALDERO.—ADDOLORATA OF CAPRIANA.—EARL OF SHREWSBURY.—GÖRRES.—CASE OF MARIA MÖRL.—PRINCE LICKNOWSKY.—DOMENICA LAZZARI.—CROWN OF THORNS.—THE ADDOLORATA OF CAPRIANA.—DOMENICA BARBAGLI.

CATALEPSY is another abnormal condition of the cerebral organs, analogous to SOMNAMBULISM, but differing from it in duration, and absence of the locomotive phenomena.

From its supposed rarity in Great Britain, its existence has been doubted by some eminent physicians, among whom the most conspicuous was Cullen, who discredited the reports of others, because he had never met with a case himself; and even up to the time of our taking our degree it was the fashion to treat it as an affection existing only in the imagination of those who had described it. More rigid and more careful inquiry has since established its existence, and as some think, and not without show of reason, proved it to be identical with somnambulism, or mesmerism. The attack is generally instan-

taneous; the sudden rigidity of the trunk and limbs, the suspension of the senses, and temporary interruption of the exercise of the intellectual faculties, having been preceded by no premonitory stage. The patient retains the posture of the body, and the expression of countenance, which he happened to have at the moment of seizure; and, by this fixed attitude and unvarying expression, presents the air of a statue rather than that of an animated being. The eyes continue either fixedly open or shut, as they happened to be at the commencement; whilst the pupil, though usually dilated, contracts on the approach of a strong light. The balance between the flexor and extensor muscles is so perfect, that any new position given to the head, trunk, or extremities, by an external force, is easily received and steadily maintained. The passive energy of the muscular system, permitting the body to be moulded into almost as great a variety of attitudes as if it were a figure of wax or lead, is the distinguishing characteristic of the disease. (JOY.) Van Swieten compared it, therefore, to that condition of the body which the ancient poets tell us was produced by the sight of Medusa's head on the shield of Minerva. Galen called it CATOCHUS. Cælius Aurelianus imagined it to be similar to apoplexy and lethargy. Praxagoras classed it among comatose diseases. Antigenes called it ANAUDIA, from the loss of hearing which accompanied it; Diocles, APHONIA, because the voice was suppressed; and Asclepiades, CATALEPSY, signifying seized or possessed. It is doubtful if Celsus was acquainted with it, though Van Swieten and Morgani think he was, and that he means cataleptics when he speaks of persons, ATTONITI, "thun-

derstruck." (DE MEDICINA, lib. 3, cap. 26.) Dr. Cullen called it APOPLEXIA CATALEPTICA, which conveys a very erroneous idea of the nature of the symptoms, and consequently of the affection.

Under the head of TRANCE, we have already given several cases of prolonged sleep, particularly that of Mary Lyall, which would seem very nearly to resemble catalepsy. Indeed, Galen mentions a case of catalepsy, which is similar to that of the attendant on the princess, and many others, mentioned in the chapter alluded to; and Dr. Mason Good quotes one from Forestus, that returned periodically every third day, like an intermittent fever. The patient was a girl nine years of age, and on such occasions was suddenly attacked with great terror, and a constriction of the abdominal muscles, accompanied with urgent difficulty of breathing. Her eyes continued open, and were permanently directed to one spot; and with her hands she forcibly grasped hold of things, that she might breathe the more easily. When spoken to, she returned no answer; but at the same time, the mind seemed to be collected, though she was without sleep, and sighed repeatedly. The abdomen was elevated; the thorax violently contracted and oppressed with laborious respiration and heavy panting, and she was incapable of utterance. (STUDY OF MEDICINE.)

Dr. Duncan, sen., of Edinburgh, has preserved the case of a cataleptic female who was about to be interred alive. She heard the conversation of the persons present; endured the horrors of seeing her own body prepared for the grave, of being laid out, and the toes tied together, and the chin and jaws enveloped in a bandage; but, when her agony

had reached a certain point, the spell was broken, and she was fortunately saved. (MEDICAL COMMENTARIES.)

Macnish, under the name of DAY-MARE, describes an affection which attacked him, similar to that of the girl mentioned by Dr. Good. "During the intensely hot summer of 1825," he says, "I experienced an attack of this affection. Immediately after dining, I threw myself on my back upon a sofa, and, before I was aware, was seized with difficult respiration, extreme dread, and utter ificapability of motion or speech. I could neither move nor cry, while the breath came from my chest in broken and suffocating paroxysms. During all this time I was perfectly awake; I saw the light glaring in at the windows in broad sultry streams; I felt the intense heat of the day pervading my frame; and heard distinctly the different noises in the street, and even the ticking of my own watch, which I had placed on the cushion beside me; I had, at the same time, the consciousness of flies buzzing around, and settling with annoying pertinacity on my face. During the whole fit, judgment was never for a moment suspended. I felt assured that I labored under incubus. I even endeavoured to reason myself out of the feeling of dread which filled my mind, and longed, with insufferable ardour, for some one to open the door, and dissolve the spell which bound me in its fetters. The fit did not continue above five minutes: by degrees I recovered the use of sense and motion; and, as soon as they were so far restored as to enable me to call out and move my limbs, it wore insensibly away." The author quoted considers this condition of the voluntary muscles identical with night-mare—an affection, or rather a dis-

ease, of which, as Cœlius Aurelianus says, many persons die: and in fact it would seem, according to the reports current at the time of his death, that Dr. Polydori, author of THE VAMPYRE, once attributed to Lord Byron, did die of this affection, or, as others think, of the remedy—laudanum—employed to remove it.

Dr. Gooch met with a case, supervening puerperal melancholia, in a female debilitated by repeated miscarriages. The trunk, as she lay in bed, was raised to an obtuse angle, and retained this painful posture; the limbs remained in any position in which they were placed; and, if set on her feet, the slightest push threw her off her balance, nor did she make any effort to regain it. The eyes were open, and the pupil, though dilated, contracted on the application of a strong light. She had three of these attacks, each of which lasted several hours, and recurred at intervals of one or two days. The patient ultimately recovered. Dr. G. Gregory says, he has met with a case. (ELEMENTS OF THE THEORY AND PRACTICE OF PHYSICK.) Dr. Joy records one of a young woman eighteen years of age, who, having been cruelly treated by a man to whom she was engaged to be married, was seized with severe and repeated attacks. The duration of the fits was from five to ten minutes, and they recurred very frequently in the course of the day. The affection afterwards put on the appearance of hysteria, and at length left her, two months after its commencement. The case of Helena Renault, recorded by Sauvages, Dr. Joy thinks, partook of the nature of catalepsy, hysteria, and epilepsy conjointly.

That the phenomena of these affections are intimately connected with, and owe their origin to, some obscure

condition of the nervous system, there can be very little doubt; and that they are analogous to mesmerism, or somnambulism, is an opinion every day gaining ground. The word hysteria, employed by Dr. Joy, however, is not sufficiently definite; and a more comprehensive term is required to designate this class of abnormal action of the brain. Fernelius mentions the peculiar case of a student, seized while at his desk, and continuing during the fit with a pen in his hand, in a fixed attitude of intense application. It is similar to the very interesting case recorded by Dr. Jebb, of a young lady who became cataleptic, on his first visit: she was employed in netting, and was passing the needle through the mesh. In this position she suddenly became rigid, exhibiting, in a very pleasing form, a figure of death-like sleep, beyond the power of art to imitate or the imagination to conceive. Her forehead was serene, her features perfectly composed, the paleness of her color, and her breathing being scarcely perceptible, operated also in rendering the similitude to marble more exact and striking. The position of her fingers, hands, and arms, was altered with difficulty, but preserved every form of flexure they acquired: nor were the muscles of the neck exempted from this law; her head maintaining every situation in which the hand could place it, as firmly as her limbs. Upon gently raising the eyelids, they immediately closed with a degree of spasm. The iris contracted on the approach of a candle, as in a state of vigilance; the eye-ball itself was slightly agitated with a tremulous motion, not discernible when the eyelid had descended. "About half an hour after my arrival, the rigidity of her limbs and statue-like appearance being yet unaltered, she sang three plaintive songs,

in a voice so elegantly expressive, and with such affecting modulation, as evidently pointed out how much the most powerful passion of her mind was concerned in the production of her disorder, as indeed her history confirmed. In a few minutes afterwards she sighed deeply, and the spasm in her limbs was immediately relaxed. She complained that she could not open her eyes, her hands grew cold, a general tremor followed; but in a few seconds, recovering ultimately her recollection and powers of motion, she entered into a detail of her symptoms and the history of her complaints. After she had discoursed some time, with apparent calmness, the universal spasm suddenly returned. Her features now assumed a different form, denoting a mind strongly impressed with anxiety and apprehension. At times she uttered short and vehement exclamations, in a piercing tone of voice, expressive of the passions that agitated her mind; her hands being strongly locked in each other, and all her muscles—those subservient to speech excepted—being affected with the same rigidity as before. (SELECT CASES OF PARALYSIS OF THE LOWER EXTREMITIES.)

It would perhaps be relieving us from any further labor on the subject of extreme catalepsy, if we simply quote the remarks of Dr. Joy on the case related by Dr. Petetin of Lyons, and so unceremoniously and unphilosophically condemned "comme une folie, comme le rêve d'une imagination exaltée," by certain physiologists. It must be premised, that Petetin referred the phenomena to the effects of animal electricity, or mesmerism, but our English writers place the case under the head of catalepsy: we except the author, from whom we quote. "One of the most remarkable cases," he says, "given by M. Petetin,

in his treatise on CATALEPSY, if it be at all worthy of credit, would seem to fall rather under the head of animal magnetism, or lucid somnambulism, than true catalepsy. He asserts not only that consciousness and the power of voluntary motion were abolished, but that the functions of the senses were transplanted into the epigastrium, and into the extremities of the fingers and toes; so that when objects of smell, taste, and touch, were applied to these parts, they were as accurately appreciated as they would have been by the nose, the tongue, and hand, in the natural state. Strange to say, these, and some still more startling facts, do not rest solely on the authority of M. Petetin; he is supported by other and equally respectable testimony." This is candid and philosophical, and deserves commendation.

The following case from Dr. Abercrombie may be considered as a species of catalepsy. "Some time ago," he writes, "I was consulted about a singular disease of this nature, which occurs in paroxysms, and affects in the same manner two individuals of one family, a young lady of twenty-five and a young man of twenty-two. The lady describes the attack in the following manner:—she is first affected with blindness in the right eye, which comes on gradually, as if a cloud passed slowly over the eye; about a quarter of an hour after this, she feels a numbness of the little finger of the right hand, beginning at the point of it, and extending very gradually over the whole head and arm, producing a complete loss of sensibility of the parts, but without any loss of the power of motion. The feeling of numbness then extends to the right side of the head; and, from it, this seems to spread

downwards towards the stomach. When it reaches the side of the head, she becomes oppressed and partially confused, answers questions slowly and confusedly, and her speech is considerably affected; when it reaches the stomach, she sometimes vomits. The feeling of numbness, from the little finger to the stomach, sometimes occupies several hours, and the common duration of the whole paroxysm is about twenty-four hours. The frequency of its occurrence varies from a few days to several months; she has been liable to it for several years, but in the intervals betwixt the attacks, she enjoys perfect health. Her brother, who is twenty-two years of age, is afflicted almost exactly in the same manner; and he has been liable to the paroxysms for many years. He is a banker's clerk, and, in the intervals between the attacks, enjoys perfect health. When he feels the commencement of the attack, he hastily brings to a conclusion any business in which he happens to be engaged; gives distinct instructions to another of the clerks, in regard to the state in which he leaves the affairs of his department; then walks home, goes to bed, and soon after becomes insensible. Next day he is in his usual health, except a considerable degree of languor. (PATHOLOGY AND PRACTICAL RESEARCHES ON DISEASES OF THE BRAIN.)

In the same work we have another case of a young lady, attacked in her nineteenth year, after having suffered much from ophthalmia, with complete insensibility and general rigidity, in which state she remained nearly two hours. This occurred in June, 1822, and in December she had a similar attack. A third took place in February, 1823, and a fourth in June of the same year. After this fourth attack, she began to have indistinctness

of vision, for the cure of which she was recommended to take an emetic; but this brought on a state of insensibility, which for a fortnight generally attacked her every day, and for the next fortnight she was generally free from them. During all this period she was only attacked by convulsion once; and, except imperfection of vision, her general health was so good, that she was married in February, 1824, but died about two months after. The evening before her death she spent cheerfully among a party of friends, returned home about eleven o'clock, and retired to bed apparently in her usual health. About eight o'clock on the following morning she was found in an insensible state, her friends at first treating it as one of her usual attacks; but, becoming alarmed, the medical attendant was expressed, but before he arrived she was dead!

Dr. Darwin mentions a young lady, subject to this affection, which began with violent shooting pain from one side of the forehead to the occiput. After which she would lie on the bed, with her fingers and wrists bent and stiff, for about two hours. She was cured by taking opium. (ZOONOMIA.) The following case was related to the author by a gentleman:—A lady, the mother of an adult family, and inclined to obesity, had acquired the reprehensible custom of exclaiming upon the most trifling occasions, OH CHRIST!—and it happened one day, sitting alone at work as was her custom, she dropped her thimble, and in stooping to pick it up overbalanced herself and nearly fell on her face, when she uttered the words OH CHRIST! On regaining her seat, she felt that the blood had flown to her head, and put up her hand to her eyes and closed them, to relieve herself.

On opening them, she saw, immediately sitting before her, a figure like a human creature; but, instead of hair, growing from each side of the head, long fleshy strings knotted here and there like the stems of pursley, depended to its shoulders and chest; and as it leaned the head upon the hands, the elbows of which rested on its knees, it rocked itself backwards and forwards, exclaiming every time it stooped, OH CHRIST! She became instantly transfixed, and remained in that position probably half an hour, when the servant entered and found her limbs rigid, and her eyes wide open, and staring as if at some object before her. Her screams procured assistance; and active remedies being employed, the lady recovered, and related what we have just mentioned. For a long time afterwards, we believe for five or six years, at the same hour every day, if sitting down, she was seized in the same manner, and saw the same horrible apparition before her.

One of the most remarkable instances occurred in the practice of the late Dr. Good:—A student of Gray's Inn, about nineteen years of age, (he tells us,) a few minutes after leaving his own chambers, was attacked with a fit of catalepsy, and continued walking, but without the slightest knowledge of the direction in which he was going, for nearly an hour. At the end of this time he began a little to recover himself, while the general use of his external senses returned. He then found himself in a large street, but did not know how he got there, nor what was its name. Upon inquiry, he found he was at the further end of Piccadilly, near Hyde Park Corner, to which, when he left his chambers, he had no intention of going. He was extremely fright-

ened, very much exhausted, and was obliged to return home in a coach. He had slight attacks afterwards, but they were not accompanied with perambulation.

Nicolai, in his interesting MEMOIR ON SPECTRES, read to the Royal Society of Berlin in 1799, relates the following case of catalepsy. It is, more correctly speaking, one of Trance. He says: "My much-lamented friend, Moses Meudeljohn, had, in the year 1792, by too intense an application to study, contracted a malady, which abounded with particular psychological apparitions. For upwards of two years he was incapacitated from doing any thing; he could neither read nor think, and was rendered utterly incapable of supporting any loud noise. If any one talked to him rather in a lively manner, or if he himself happened to be disposed to lively conversation, he fell, in the evening, into a very alarming species of catalepsy, in which he saw and heard every thing that passed around him, without being able to move a limb. If he had heard any lively conversation during the day, a stentorian voice repeated to him, while in the fit, the particular words or syllables that had been pronounced, with an impressive accent, or loud emphatic tone, and in such a manner that his ears reverberated."

We now proceed to speak of that still more exalted excitation of the cerebral organs, which, in all ages and in all countries, even to the present hour, has been considered as the direct interference, or even presence, of the DEITY himself. We allude to ECSTASY.

We must be excused from entering into the history of this affection, as, in fact, it would lead us into a very prolix dissertation on the mythism of Egypt, the oracles of Greece, the mysteries of Isis, and the pythonism of the

Delphic Apollo. We shall, therefore, simply treat it as a question of diseased function of the brain, often sporadic, sometimes acquired, frequently provoked, and generally incurable. The fit is, for the most part, induced by deep and long-sustained contemplation of some object capable of awakening an exalted enthusiasm; and during its continuance, the patient often speaks with earnestness, prays with fervor, or sings with pathos and expression. Vivid dreams, or visions of an extraordinary nature, occasionally occur, and are so firmly impressed on the memory, that they are easily recollected and readily detailed. (JOY.)

Sauvages gives an instance, in which the first part of the paroxysm consisted in violent declamation, gesticulation, and loud singing, the girl being insensible to external objects; while, in its termination, the fit had all the characters of true catalepsy.

Dr. Mason Good says it is sufficiently distinguished from CATALEPSY, by the inflexible rigidity of the muscles, while consciousness is for the most part suspended. An instance of this kind occurs in the first volume of the MEDICAL OBSERVATIONS: a woman of fifty was daily seized, for years, with rigidity of the muscles of the body, a sound sleep supervening, from which nothing could waken her. She remained so from sunrise to sunset, and then recovered, took her food, continued awake all night, but relapsed again into the cataleptic state every morning. But this was an ordinary attack, apparently unconnected with any marked excitement of the intellectual organs; and, according to the following description of an enthusiast, was rather cataleptic than ecstatic.

"The genuine enthusiast is always possessed of a warm

imagination, and is generally of a nervous temperament and delicate frame; and a long series of elevated abstraction on religious subjects, combined with protracted fasting, has ordinarily been the harbinger of the fancied afflatus. Such was the discipline by which the lovely and blooming and sincerely-devout St. Teresa was prepared for ecstasies and visions, and led to impose upon herself, and seriously to believe, in the fervor of her mind, that her body was lifted from the earth; that she heard the voice of God, saw our Lord, with St. Peter and St. Paul, standing on her left hand; by the first of whom, the cross, which was at the end of her beads, was miraculously transformed into four large gems, incomparably more precious than diamonds, with many other marvellous revelations, which we cannot find room to detail. It should be noticed, also, that devils, which she always kept at a distance, by sprinkling holy water, appeared to her as well as blessed spirits; and that she was an eye-witness to the joyful escape, from purgatory, of the purified souls of Father Peter of Alcantara, Father Ivagnez, and a Carmelite friar." (MASON GOOD.)

Cases of Ecstasy have been very numerous in the East; the most remarkable and extraordinary exemplification of which, is that of MAHOMET, who conceived the daring but not original idea, of rendering disease subservient to the dictates of ambition. A martyr to cataleptic ecstasy, and probably imbued with a deep tint of superstition, he pretended to enjoy, or perhaps persuaded himself to believe that he enjoyed, communication with the ALMIGHTY; and to stamp the delusion with the character of truth, it is alleged, that he taught pigeons to peck peas from his ears while in the ecstatic paroxysm—an acquired

habit, which he represented as the act of inspired messengers bearing important communications from heaven. How he succeeded, is known. We have also had ecstatic prophets in the West, of which, Sharpe, Swedenborg, Johanna Southcote, Irving, and Thoms, are recent examples, and need not detain us. We must find room, however, for what Ferriar details of the famous KOTTER, at once enthusiast, catalept, monomane, and prophet of Germany, who related his visions on oath, before the judicial authorities, in 1610. They had however been seen before this period. This unfortunate man, believing that he was attended by two angels, says, "On the thirteenth day of September, both the youths returned to me, saying, 'Be not afraid, but observe the thing which will be shewn to thee.' And I suddenly beheld a circle like the sun, red, as it were bloody, in which were black and white lines, or spots, so intermingled, that sometimes there appeared greater number of blacks, sometimes of whites; and this space (object?) continued for some space of time. And when they had said to me, 'Behold! attend! fear not! no evil will befal thee!' lo, there were three successive peals of thunder, at short intervals, so loud and dreadful, that I shuddered all over. But the circle stood before me, and the black and white spots were disunited, and the circle appeared so near, that I could have touched it with my hand, and it was so beautiful, that I had never in my life seen anything more agreeable, and the white spots were so bright and pleasant, that I could not contain my admiration. But the black spots were carried away in a cloud of darkness, in which I heard a dismal outcry, though I could see no one. Yet these words of lamentation were audible:—'Woe unto us

who have committed ourselves to the black cloud, to be withdrawn from the circle, covered with blood of divine Grace, in which the Grace of God, in his well-beloved Son, had enclosed us." (THEORY OF APPARITIONS.)

Dr. Hibbert relates the following from the MERCURE GALLANT of the year 1690, and calls it "a proper waking impression, and not a dream." We are of opinion, if it was not a dream, it was ecstasy, or at least catalepsy. The ecstatic relates his own story:—"I was sent very young to a town at a distance of seven leagues from my native place, in order that I might be weaned from home, and learn to write. Having returned from thence at the expiration of five or six months, I was directed to repair to the house of one of my relatives where my father, who was newly returned from the army, had arrived, sent for me. He examined my specimens of writing, and, finding them good, failed not to express a suspicion of their being my own. As he was going out therefore, one afternoon, along with the lady of the house, to pay a visit in the neighbourhood, he recommended me to write ten or twelve lines, in order to remove his doubts. Immediately on my father's departure, my duty prompted me to go up to the chamber that had been allotted for us, and, having searched for all my writing materials, I knelt down (being then a little boy) before an arm-chair, upon which I placed my paper and ink. While engaged in writing, I thought I heard, upon the staircase, people who were carrying corn to granaries; having therefore risen from the place where I was kneeling, I turned a corner of the tapestry, and saw a little room open; and, in this room, my father seemed engaged in conversation with the lady of the house, being seated near her. As I

had seen both one and the other get into a carriage, and set out from the château, I was much surprised at now seeing them before me. Terror united itself to astonishment; I let go the tapestry, and, leaving the chamber, quickly descended the staircase. Upon meeting with the housekeeper, she remarked some alteration in my face, and asked me what was the matter? I told her all about it. She honestly assured me I had been dreaming, and that the Marchioness and my father would not return for more than an hour. I would fain have discredited her assurance, and stood near the door of the room, until, at length, I saw them arrive." Having told his father what he supposed he had seen, to undeceive him, he took him up to the granaries or garrets to which the staircase led. "It was then made known to me, that these garrets were not fit to be the store-rooms for corn,—that there was actually none there, and that there never had been any. Upon my return, as I followed close to my father, he asked me to point out the place where I had lifted up the tapestry, and seen the room open. I searched for it in all directions, but in vain. I could find no other in the four walls of the chamber, than that which led to the staircase. Observe," concludes the writer, "how strong the impression of this dream was. I think candidly that if the vision had not been falsified by all the circumstances which I have just noted, I should, even at this time, have received it for a truth."

Few recent cases, however, have attracted so much attention, or have been so fortunate in an historian, as those of the ESTATICA of Caldero, and the ADDOLORATA of Capriana. The attention of the Germans—a laborious and patient people, addicted to study, deep thought, and ela-

borate catenation of phenomena, and favored by nature with an acuteness of the perceptive faculties, and an exility of mind, which, if they have not been wholly denied, have been but partially awarded to the other nations of Europe—was attracted to these cases, eight years ago, by Görres, who, in his work on MYSTICISM, first noticed the existence of Maria Mörl, the Estatica, whom he visited, and made mention of Domenica Lazzari, the Addolorata, whom he did not visit, as being persons subject to the ecstatic paroxysm. In England, however, scarcely anything was known of them, till the Earl of Shrewsbury, in 1841, favored the public with an interesting account, in a pamphlet, from which, by his Lordship's kind permission, we extract the following particulars: Maria Mörl, the Estatica, was born in October, 1812, of an ancient and respectable family, possessing the means of decent subsistence within their own sphere of life; and, during childhood, does not appear to have been distinguished by anything remarkable. As she grew up, however, she became "intelligent and clever, full of the gentlest benevolence, especially to the poor, and fervent in the exercise of prayer, to which she often gave herself up in the church of the Franciscans in the neighbourhood of her father's house." She was now subject to attacks of illness, probably of a nervous nature, though Lord Shrewsbury, who quotes from Görres, does not say so. Her mother being dead, the affairs of the family fell immediately under her superintendence, and in the performance of these duties she acquitted herself, we are informed, with much propriety. Whether she was subject to convulsions, to epilepsy, or to catalepsy, we are not informed; but in 1832, when "she had attained her

twentieth year, she evinced the first symptoms of ecstasy, falling into that state each time that she received the Holy Communion. But it suddenly took a more decided character on the festival of Corpus Christi of that year, in Caldaro, as is thus related by Görres: 'As her confessor was aware that she always, after communion, remained six or eight hours, sometimes longer, in a state of ecstasy, he thought it expedient that she should receive it early, in order to be at rest the remainder of the day. Accordingly, he carried the BLESSED SACRAMENT to her at three o'clock in the morning, after which she fell immediately into a state of ecstasy. Her confessor left her; and, being much occupied that day and the next morning, he did not return to her till three o'clock on the afternoon of the following day, when he found her kneeling in the exact position in which he had left her thirty-six hours before. In great surprise, he questioned the people of the house, and learned from them that the ecstasy had continued uninterrupted during the whole of this time. He perceived from this, how deeply the ecstatic state had penetrated her whole being, since it was already a state of second nature to her; and that, in future, it must be her habitual condition, unless he should bring it within limits, by recalling her to herself: he therefore undertook to regulate this state by virtue of that holy obedience which she had vowed upon entering the third order of Saint Francis.

"When this singular prodigy came to be known," writes Lord Shrewsbury, "the interest which it excited amongst a pious and religious people was prodigious. 'All at once,' continues Görres, 'and in all directions at once, a general impulse seized the people. They came in

crowds to see with their own eyes a phenomenon, which, although well known from ancient legends, had long ceased to be hoped for or expected in these days. Whole parishes, forming into processions, continued without intermission to arrive at Caldaro, preceded by the banner of the cross, and the concourse was immense. From the end of July until the 18th of September in the same year, more than 40,000 persons came to behold the ecstatic. The Government, however, took alarm at such assemblages of people, and put a stop to them. Upon which the Bishop of Trent went in person to Caldaro, and instituted an inquiry on oath into all the circumstances of the case, to prevent the possibility of deception or illusion.' Shortly afterwards the stigmata made their appearance, and is thus also related by Görres. 'So early as the autumn of the year 1833, her confessor observed accidentally that the part of the hands where the wounds afterwards appeared began to sink in, as if under the pressure of some external body, and also that they became painful and frequently attacked by cramps. He conjectured from these appearances that the stigmata would eventually appear, and the result fulfilled his expectations. On the Purification, the 2nd February, 1834, he found her holding a cloth, with which from time to time she wiped her hands, frightened like a child at what she there saw. Perceiving blood upon the cloth, he asked her what it meant? She replied, that she did not know herself; that she must have hurt herself so as to draw blood. But, in fact, these were the stigmata, which thenceforward continued upon her hands, and shortly afterwards made their appearance upon her feet, and to these at the same time, was added the wound upon the

heart. The manner in which her confessor, father Capistran, deals with her is so simple, so far from aiming at the marvellous, that he did not even inquire what had passed within her to give occasion to these wonderful appearances. They are nearly round, but a little extended lengthwise, from three to four lines in diameter, and are permanent both in the hands and the feet. Drops of clear blood frequently flow from them on Thursday evenings and Fridays; on other days they may be seen covered with a sort of crust of dry blood, without the least appearance of inflammation, ulceration, or any vestige of lymph!'"

The following is the description of this extraordinary being, as given by Lord Shrewsbury:—"We found her in her usual state of ecstasy, as represented in the annexed print, kneeling upon her bed, with her eyes uplifted and her hands joined in the attitude of prayer, as motionless as a statue. She was dressed in white, with her head uncovered, but with very long, flowing, black hair, and there was much of elegance in her figure and grace in her attitude. Our first feeling was that of awe, at finding ourselves in the presence of so favored a creature. When this had partially subsided, we might have mistaken her for a waxen image; for it appeared impossible that any being possessed of a soul could seem so inanimate—could remain so motionless; still, a closer inspection soon proved that that soul was at work. When in this state, she neither sees nor hears; all her senses are absorbed in the object of her contemplation; she is entranced—but it is neither the trance of death, nor the suspension of life, but a sort of supernatural existence—dead, indeed, to this world, but most feelingly alive to the other; one might

fancy that the spirit were dwelling in heaven, while the body (without, however, losing its consciousness,) remained expecting its return. After contemplating her in this condition for some minutes, she closed her eyelids, but without any other, even the slightest, movement, and certainly without the least perception of our presence. She might have remained, in this state and posture for several hours, had not her confessor, by a slight touch or word, we could not exactly say which, so quiet and imperceptible it was, caused her to fall back upon her pillow, which she did with the most perfect ease; placing herself in a sitting posture with her legs extended under the counterpane, without the slightest effort, and without awaking from her ecstasy; remaining with her eyes shut, and her hands joined as before in the attitude of prayer, her lips motionless, and her soul transfixed in the same profound meditation. After again contemplating her for a few moments in this new position, her confessor proposed to us that he should awaken her entirely from her trance. We had no sooner assented, than he addressed her in a mild gentle tone, as did the assistant priest from the other side of the bed, which was placed with its head against the centre of one side of the room, we standing close at her feet;—when, in an instant, the most perfect animation was restored to her. She let fall her hands, and opened her eyes, while her countenance beamed with a most heavenly, benignant smile, full of gratitude and joy, looking first to one side, then to the other, as if it were the unexpected meeting of friends whom she had not seen for years. She then took the hand of her confessor, and kissed it with the most unaffected devotion, and, turning with equal kindness to the assistant, paid him the same

mark of affectionate respect. Her consciousness of our presence was merely signified by an occasional glance of the eyes, which otherwise were kept modestly cast down upon her hands. These she was continually covering with the ruffles of her sleeves, which were wide and ample, for the express purpose of hiding the stigmata with which they were marked. Both the confessor and assistant said a few words to her at short intervals, which appeared to give her great pleasure, and to which she assented by an inclination of the head, with that same placid benignant smile which had stamped the moment of her awaking with an inexpressible charm. * * * It was the sweetest scene we ever beheld. It was, however, soon and abruptly terminated; for one of our party, happening incautiously to ask the confessor, in her hearing, whether she were marked with the stigmata, she instantly changed countenance, as if she had heard that which would make her sorrowful, and, without any perceptible transition, became again transfixed in ecstasy, with her hands, as before, joined over her breast in the attitude of prayer."

Her confessor afterwards, by a few words, brought her to herself, when she presented each of Lord Shrewsbury's party "with a small holy print;" and "it was upon this occasion," says his Lordship, "that we distinctly observed the stigmata on her hands, though marked only by a red spot, perhaps a quarter of an inch in diameter."

Before we proceed to speak of the Addolorata, there are two anecdotes of this Estatica, which as they are curious in a physiological point of view, and still further corroborate the opinion of Lord Shrewsbury and others, that

her condition is that of seraphic ecstasy and not ordinary disease, we shall relate. M. de la Bouillerie, visiting her on his way to Rome, states, that in a kneeling attitude, in the ecstatic paroxysm, "he saw a fly walk quietly across the pupil of her eye, when wide open, without producing the slightest sensation upon her," and Prince Licknowsky, who saw her in 1839, told Lord Shrewsbury, that, "while kneeling in ecstasy on her bed, to his great surprise, he observed her moving round towards the window. Neither he, nor any of those present, knew what it meant till, looking out, they saw the viaticum passing on its way to the sick, without bell, or chaunting, or any sound that could indicate its presence."

Of the truth of the latter recital we have no doubt, as similar facts have been related of other favored individuals, among whom are Ida von Löwen, Coleta, the Cistercian nun Juliana, Cassetus, St. Francis Borgio, and some others.

Of the Addolorata of Capriana, Lord Shrewsbury thus speaks:—"Domenica Lazzari was born at Capriana in 1816. Her parents were the proprietors of a mill and a small field, which afforded a sufficient maintenance to a family of five children, of whom she was the youngest and the mother's favorite, having been born in her fifty-first year." She seems to have labored under religious ecstasy at a very early age, and, as may be conceived, suffered from general bad health; or, to use the language of Lord Shrewsbury, "her sufferings were so great, that her screams were often heard to a great distance. It was under these circumstances that, during one night, her whole head was encircled by small wounds, fifty-three in

number, which opened and bled profusely every Friday. Fourteen days after the Crown of Thorns, she received the stigmata in the hands and feet."

On the 21st of May, Lord Shrewsbury saw her. "She was, as usual, lying on her back in bed, though comparatively free from suffering. The crown of thorns was as regularly and as distinctly marked across her forehead, by a number of small punctures, as if they had been pricked with a large pin, and the wounds appeared quite fresh, though no blood was flowing from them.

"Beneath was a regular interval of about a quarter of an inch, also perfectly free from blood, so as to give the punctures, which represented the wounds from the crown of thorns the most perfect possible degree of distinctness. Below this line, her forehead, eyelids, nose and cheeks, were entirely covered with blood, leaving only the upper lip and the whole of the lower jaw free from it. It had flowed in the morning, and was then dry. Her hands were firmly clasped over her chest, as one in a state of considerable pain; and her whole frame was convulsed with a short, quick, tremulous motion. The blood was still oozing perceptibly from the wounds in the back of her hands, though the blood and serum, which had flowed from them, did not extend above two, or at most three inches. Her fingers were so firmly clasped, that to judge from appearances, she had not the power to loose them; but, on the clergyman, who accompanied us, asking her to let us see the inside of her hands, she immediately opened them from underneath, without unclasping her fingers, as a shell opens upon its hinges; so that we distinctly saw the wounds and the blood and serum quite fresh, and flowing down over the wrist. At our request,

he also asked the mother to uncover her feet, which she did, though with some small reluctance; when we found them in the same condition as the hands, with, however, this singular and surprising difference, that instead of taking its natural course, the blood flows upwards over the toes, as it would do were she suspended on the cross. We had already heard of this extraordinary deviation from the laws of nature, and were now happy to have an opportunity of verifying it in person."

Since making the above extracts from Lord Shrewsbury's really important pamphlet, his Lordship has published a second edition, to which he has added the very surprising and wonderful relation of Domenica Barbagli, the Estatica of Monte Sansavino. As this case as well as the two preceding, oppose phenomena which are inexplicable by any of the known laws of nature, it may be asked by the profession what have they to do in a work which pretends to treat only of natural and not supernatural occurrences? Our reply is simply this—that in the first instance, from the very insufficient data which we possessed, and looking with an eye of suspicion upon all marvellous relations, we treated them merely as cases of disease, and therefore inserted them under the head of Cataleptic Ecstasy. But a more careful examination of the subject, obtained through Lord Shrewsbury himself in certain conversations which we had the honor to hold with his Lordship, has convinced us that we were mistaken in the opinion we had adopted, and that the appearances which these highly devout and pious persons present can be explained by no known law of nature, and therefore in the absence of the knowledge of any such law, we are bound to refer the phenomena to the direct in-

fluence of that Great God who made, sustains, and orders all things. Should this work therefore reach a second edition, the subject will be treated separately at some length, and these extraordinary cases classed with those events of a purely spiritual nature with which the history of our Holy Religion, as connected with the Catholic Faith, so much abounds.

Lord Shrewsbury, after stating that in the winter of 1841-42 having heard of an Estatica near Arezzo in Tuscany, he determined to visit her. "We found her in a considerable-sized attic, confined a cripple to her bed. From the spot on which she lies, she looks through a grating fixed in a partition wall, into a small chapel fitted up for her especial service. It was half-past eleven in the forenoon. She was perfectly tranquil—which is her usual state,—speaking in an exceedingly low tone of voice, as one incapable of greater exertion: for eating little or nothing, a small quantity of salad and a little coffee,—her stomach rejecting bread or any thing solid—she is a perfect skeleton. Indeed we were assured that even this small quantity was taken—so trifling is it—not by way of sustenance, but merely to refresh her mouth. Her countenance, which is extremely interesting, with very sweet, delicate, and regular features, and fine soft dark eyes, is not, however, in the same state of emaciation as her body, though withal very thin and extremely pale. Were her eyes shut, she would be a perfect corpse. Her mind, as if it had acquired strength from her physical debility, is extremely vigorous and active; and such is her reputation for piety and sense, that persons come from a great distance to consult her upon nice and difficult questions, and which she, a poor, simple, illiterate

girl, with no other instruction than her catechism, decides with a promptitude and ability which seem quite oracular. Her own natural diffidence and humility prompt her to decline so high and honorable a function, and she only undertakes it in obedience to her spiritual director.

"Contrary to Maria Morl, a tranquil state of wakefulness and of mental prayer is her usual condition, and her ecstasies are the exceptions, as they only occur during, and for a short space of time after, the mass which is daily celebrated in her little oratory, and in the afternoon of every Friday. Such is their regular and unvaried course, subject however to cease when her health is in a still more precarious state, or to be excited at the desire of her confessor when her prayers are requested on very particular occasions: for it is during her state of ecstasy that she offers up her supplications to the throne of grace, to the Giver of all good gifts. When therefore the opportunity does not occur sufficiently soon to satisfy some urgent case, and her confessor sees occasion to require it, she falls, at his bidding, into that state of intimate communing with her God which is the most propitious for the purpose.

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"She is now (1842) twenty-nine years of age. Her father (who is dead) was a journeyman tailor, and her brother still follows the same humble craft. As a child, she was remarkable for her docility, her piety, and the assiduity with which she learned her catechism. About sixteen years since, she had a severe fall down stairs, which so terrified and otherwise affected her, as to bring on convulsions; and lay the foundation of her corporal maladies; and which in their turn have been the means employed by Providence to bring her, as far as human

power can judge, to her present state of high spiritual perfection. Her illness so increased upon her, that within four or five years she became entirely confined to her bed. * * * * * *

"She has been attended by numberless physicians, ever submissive to the treatment which they thought proper to prescribe—however troublesome or painful—her only anxiety being to satisfy her duty, and to conform herself to the will of God. Their prescriptions fortunately neither killed nor cured, but left her precisely where she was, helpless and bed-ridden, sleeping little and eating nothing. She is moved about once a fortnight for the purpose of arranging her bed, and changing her dress: but the difficulty with which this is accomplished is such, that it never fails to throw her into a fainting fit, from which she only recovers when she is again placed in her bed. She is dressed in a plain, long, white calico wrapper tied round her waist, and which sufficiently indicates her extremely emaciated condition. She also wears a plain white cap with a neat muslin frill." * *

His Lordship having visited her on the following morning to assist at mass—"found Domenica precisely in the same position in which we had seen her on the previous day, calmly laying upon her back—covered with a weighty counterpane—her head slightly raised upon her pillow, so as to afford her a sight of the altar and of the officiating priest. At the Offertory she suddenly threw forward the bedclothes, and instantly rose upon her knees with her arms outstretched, and her eyes elevated to heaven, motionless as a statue. She who had been bed-ridden for eleven years, and so perfectly helpless that it is with extreme difficulty, as I have just observed, she is moved with

the assistance of several persons, and which invariably produces syncope, now sprang into the beautiful attitude in which we then beheld her, with a swiftness, elasticity, and energy, as if a spring of highly-tempered steel were in every joint. She remained in this position for two or three minutes, and then slowly folding her arms across her breast, she gradually sank again upon her pillow with surprising grace and dignity, and in a manner as unearthly as that in which she had risen. Her mother then covered her again with the counterpane, and she again became conscious of what was passing around her.

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"To prove how totally unconscious she was of every thing around her, and yet how peculiarly sensible to certain external influences—in how strange a condition of body, whether the natural effect of her illness, or arising from her singularly spiritualized state, I will not venture to determine—the chaplain (not the archpriest, who was not present on this occasion) desired me to touch her hand, when the slightest pressure of my finger upon hers made her arm fall several inches, and put her into a swinging motion from side to side. This movement was considerably ncreased by the same person blowing at her gently with his breath, so exceedingly aerial and unsubstantial is her frame. None of these influences, however, produced the slightest alteration in her attitude, or the least impression upon her senses; her eyes and countenance remaining fixed and immoveable as before, and her arms resting in the same position,—only swinging with, and entirely regulated by, the body. Before this motion had entirely subsided, he gently blew at her in front, and she then swung to and fro, backwards and forwards, showing how

singularly distinct was the effect of so gentle a breath upon her, the impulse being given according to the direction from whence it came. Gradually the oscillation ceased, and she recovered her balance; when she fell back with the same grace and dignity as upon other occasions, regaining her position upon her pillow with her arms crossed, and was again covered with the counterpane."

Those who believe in the reality of the mesmeric phenomena, will probably refer this last, and perhaps the preceding cases, to spontaneous Mesmerism. But how will those account for them, who deny the truths of Mesmerism, and who consider that that unknown agent and its consequences are the effects of collusion and imposture?

The facts related in Lord Shrewsbury's pamphlet cannot be denied. They are attested by thousands; and if, as we believe, they are free from the suspicion of imposture, what solution can they offer, that shall satisfy the inquiring mind?

Many who will take but a superficial view of the subject, will reject the whole narrative as unworthy of credit, and class it among, what it has been the fashion to call, monkish legends. But it is manifest that this is a very unphilosophical mode of removing a difficulty. Is it not possible to conceive, rather, that there may be some occult cause, of which we as yet know nothing but from its effects, which, in certain temperaments, or dispositions, manifests itself in phenomena which are contrary to the experience of ages, and inexplicable by the ordinary laws of nature?

Before the discovery and effects of steam were made known, who could have conceived the wonderful regu-

larity, safety, and despatch of rail-roads? Before the beautiful process of Daguerre was published, or the all but supernatural celerity of the calotype exhibited, who would have credited their discoverers, had they without ocular demonstration informed us, that in the short space of a few seconds, a miniature could be obtained solely by the aid of light, of such astounding faithfulness as to require even the aid of a magnifying glass to perceive the minute details of its outline, and the surprising exactness of its capillary representation?

These facts should make every one pause when reading of these Ecstatics; while the philosopher will suspend his judgment, till he has inquired into the truth of the allegations. In the mean time, we beg to refer to Lord Shrewsbury's pamphlet for further information.

CHAPTER IX.

PHENOMENA OF DREAMS.—OPINIONS OF GALL, DEMOCRITUS, AND OTHERS.—GALL'S SYSTEM.—DR. ABERCROMBIE DIVIDES DREAMS INTO FOUR CLASSES.—PROFESSOR MAAS'S DREAM.—GALILEO'S DREAM.—REMARKABLE CASE OF DREAMING IN AN OFFICER.—SMELLIE'S DREAM.—RECOLLECTIVE DREAMS.—MR. COMBE'S CASE,—PREVENTIVE DREAM, FROM BLACKWOOD'S MAGAZINE.—CUSTOM OF GIVING AWAY PENNY LOAVES AT NEWARK.—CASE OF DOUBLE DREAMING.—MATHEWS'S DOUBLE DREAM.—CURATIVE DREAMS.—MURDER PREVENTED BY A DREAM.—EXTRAORDINARY DREAM OF A LADY.—DREAM FROM GASSENDI.—PREMONITORY DREAM.—DREAM OF FLAMINIUS.—MELANCHOLY FULFILMENTS OF DREAMS OF A PHYSICIAN, AND OF NASSENUS.—DREAM OF MRS. GREENWOOD.—CURIOUS ANECDOTE OF THE GREAT HARVEY.—DREAM FROM ALEXANDER AB ALEXANDRO.—DREAM OF LUDOVICUS MADIUS.—ST. AUSTIN'S ACCOUNT OF THE DREAM OF PRÆSTANTIUS.—MAGNENUS'S EXPLANATION OF DREAMING.—DREAM FROM IZAAK WALTON.—DREAMS OF CHRISTIAN KING OF DENMARK, ADOLPHUS EMPEROR OF GERMANY, LEONARDUS THURNISSER, AND SERAPHINUS OBDUCTIUS STRANCIONICUS, PREMONITORY OF THEIR DEATHS.—PARKER'S DREAM OF THE ASSASSINATION OF THE DUKE OF BUCKINGHAM.—BELL'S NARRATIVE OF A DREAM.—LORD ROSCOMMON'S DREAM.—DREAMING AND INSANITY NEARLY ALLIED.—FRANKLIN BELIEVED HE WAS ADMONISHED IN DREAMS.—CHARACTER GIVEN TO DREAMS BY THE EXCITING CAUSE.

THE phenomena of dreams have attracted the attention of mankind, from the remotest periods to the present hour. Not so their mystic expounders. They have ceased to be patronized by princes, or to be lodged in palaces, and are now only to be found in hovels, or discovered in cellars; while their patrons are the low and the illiterate, the unfortunate and the weak—those who

fail in enterprises they have undertaken without due consideration, who pursue some impossible good of which they are solicitous, or who, neither having the patience to await the secession, nor the fortitude to surmount the evils of life, fly to adventitious sources for relief, as men in the agonies of submersion, are seen to catch at the crest of the wave which engulfs them.

Until very lately, however—indeed, we may say, not till Gall appeared—we had no explanation whatever of the manner in which they were produced, which could be considered either philosophical or physiological. All was dogmatism and conjecture, founded on data which were suppositious, and deduced from conclusions which were erroneous. A review of the opinions, of only a very few of those who have written on the subject, will justify our remarks. Referring to the ancients, we find that Democritus and Lucretius accounted for them, by supposing that the spectres or recriminations of corporeal beings, constantly natant in the atmosphere, attack the soul during the hours of repose, and thus produce those indescribable series of associated or disconnected ideas, characteristic of dreams; while Baxter believed, that certain spirits or demons amused themselves by tormenting us in sleep. To account for their phenomena, Porphyrius gave us a good and a bad demon—the bad, inflicting the misfortunes we endure; the good, foreshewing the evils to come, to the end that we might avoid them. Smellie's notion was peculiarly his own:—"To deny," he says, "the possibility of supernatural suggestions, either when asleep or awake, would be both presumptuous and absurd. On the contrary, I can conceive a superior being so thoroughly acquainted with the human frame, so perfectly

skilled in the connexion and mutual dependence which subsist between our intellect and our sensitive organs, as to be able by titillating, in various modes and directions, particular combinations of nerves, or particular branches of any single nerve, to excite in the mind what ideas he may think proper. I can likewise conceive the possibility of suggesting any particular idea, or species of ideas, by affecting the nerves, in the same manner as these ideas affect them when excited by any other cause." Haller considered them as symptoms of disease, or "a stimulating cause, by which the perfect tranquillity of the sensorium is interrupted." Willich, who is not so well known, defined them to be "vagaries of the imagination, proceeding in most cases from external sensations;" and Lord Brougham is scarcely out of the mire of school divinity when he talks of "the possible disconnexion of mind and matter in dreams." His Lordship confounds "function" with "soul," and the activity of the organs of mind, with the mind or intellect itself. Thus the result of all the actions, which is but a consequence, is made an entity. Attributing them to Divine interference, Dion Cassius says he was commanded in a dream to write his history; and Cardan avows the same in his treatise, DE SUBTILITATE. Melancthon divided them into four kinds—vulgar dreams, presaging dreams, divine dreams, and diabolical dreams; while Cardan calls them, monitory, persuasive, deterring, and impelling. None of these explanations enlighten us on their physiology, more than oneirocriticism did on their interpretation; of which mysterious art, Duncan Campbell, the deaf and dumb man, was, we believe, the last celebrated professor.

We have not recorded a tenth of the opinions of au-

thors upon this subject, nor have we alluded to the "sub-reasoning" faculty, which some supposed they had discovered was a property of the brain in sleep; for what work would contain even a catalogue of the conjectures, surmises, theories, systems, and explanations, which every ontological and theological writer, from Cicero to Lord Brougham, has deemed it necessary to offer? Few wrote correctly, like Dr. Parr, or thought justly, like Gall; and therefore we lose nothing by withholding their gratuitous and often unintelligible doctrines. We have already given the theories of Spurzheim and Carmichael; and, after quoting Dr. Parr's experience of dreaming, we shall give the theory of Gall, on which both the former authors founded their systems. Parr says,—"In dreams we seem to reason, to argue, to compose; and in all these circumstances during sleep, we are highly gratified, and think we excel. If, however, we remember our dreams, our reasonings we find to be weak, our arguments we find to be inconclusive, and our compositions trifling and absurd." This is not, however, invariably the case, as will be seen at the termination of this chapter. Gall's statements and reasonings are as follow:—

"Almost all physiologists agree, that, in dreaming, animal life is partially active. They are right, and yet they deny the plurality of organs! But dreams cannot be conceived without the hypothesis of this plurality.

"When in sleep particular organs of animal life become active, the sentiments and ideas which depend upon them must necessarily be awakened; but, in this case, the activity is independent of the will.

"When one organ only is active, the dream is simple: the object of our love is embraced, harmonious music is

heard, we fight our enemies, accordingly as one organ or another is performing its functions.

"The more organs (that) are in activity at once, the more the action of the dream will be complicated or confused, and the more incongruous will these be. When the organs are fatigued by the waking state and exertion, we usually do not dream during the first hours of sleep, at least, unless the brain is very irritable. But, in proportion as the organs become refreshed, they are more disposed to enter into activity; when towards the approach of rising we dream more and with greater vivacity.

"How is it that in a dream certain faculties occasionally display more energy than in the waking state? What precautions do we not take to meditate profoundly on a subject! We prevent all external impressions, we put our hand before our eyes, we shut ourselves up, to concentrate all our attention on a single point. The same thing takes place in certain dreams. All the vital energy is concentrated on one organ or upon a small number of organs, while others are in repose; so that the energy of the former becomes necessarily more energetic. The sentiments and ideas excited in a dream are, in some cases, completely disengaged from all external mixture. We therefore cannot be astonished if some, like Augustus La Fontaine, make admirable verses in their sleep; or, like Alexander, draw out the plan of a battle; if others, like Condillac, solve difficult problems; if, on waking in the morning, some, like Franklin, find a work completed which had been projected on going to bed; if in sleep the true relations are discovered, which, in the tumult of sentiments and ideas, had defied our sagacity."

Dreams occur only when sleep is unsound; for, as just

remarked by Gall, we seldom dream during the first hours of repose; and every thing capable of interrupting tranquillity of mind, or repose of body, such as grief, sorrow, love, anger, or cerebral exertions, our affections, our passions, crude and undigested food, a hard and inconvenient bed, or pain in a remote part of the body, or the bed-clothes falling off, may produce dreams. Those ideas which have lately occupied our mind, or made a lively impression on the sensorium, generally constitute the principal subjects of a dream, and more or less employ our imagination when we sleep. Animals likewise dream, but seldom; and even men, living temperately and enjoying perfect health, dream little. Voltaire has some judicious observations on the subject, in his PHILOSOPHICAL DICTIONARY; but we can do no more than allude to them. His opinion of the phenomena of dreaming is similar to that entertained at the present day, and shows how frequently great minds, by dint of sheer genius, will arrive at correct conclusions; while duller men require the aid of the cautious and progressive sequence of the inductive philosophy—the only sure and certain mode of reaching truth, however—whatever may be the pretensions or the powers of genius.

Dr. Abercrombie thinks, that, "in dreaming, the impressions which arise in the mind are believed to have a real and present existence; and this belief is not corrected, as in the waking state, by comparing the conception with the things of the external world; and that the ideas or images in the mind follow one another, according to associations over which we have no control; we cannot, as in the waking state, vary the series, or stop it at our will."

He considers the phenomena may be divided into four

classes. First, those in which recent events are mingled with each other in one, continuous series, or with old events, by means of some feeling, which had been in a greater or lesser degree allied to both, though in other respects entirely unconnected: second, trains of images brought up by association with bodily sensations: third, dreams consisting of the revival of old associations, respecting things which had entirely passed out of the mind, and which seemed to have been forgotten: and fourth, those in which a strong propensity of character, or a strong mental emotion, is embodied; and this is the state of the brain which has more than any other excited the curiosity, awakened the fears, exercised the ingenuity, and still continues to elude the inquiry of man.

In the first instance, we account for a dream in the following manner:—We hear of a distressing accident; we have received unpleasant news; or we have been concerned in some business which gave rise to anxiety: we dream, and all these incidents are combined. We ourselves suffer the accident; we are in company with the absent friend, or the person with whom we transacted business appears in the scene. (INQUIRIES CONCERNING THE INTELLECTUAL POWER.) A woman, who was in the clinical ward of the Edinburgh Infirmary, talked a great deal in her sleep, and made numerous and very distinct allusions to the cases of other patients. These did not apply to any who were in the ward at the time; but, after some observation, they were found to refer correctly to the cases of the individuals who were there when this woman was patient in the ward, two years before.

Professor Maas, of Halle, gives the following account of a

dream:—"I dreamed once," he says, "that the Pope visited me. He commanded me to open my desk, and carefully examined all the papers it contained. While he was thus employed, a very sparkling diamond fell out of his triple crown into my desk, of which, however, neither of us took any notice. As soon as the Pope had withdrawn, I retired to bed; but was soon obliged to rise, on account of a thick smoke, the cause of which I had yet to learn. Upon examination I discovered that the diamond had set fire to the papers in my desk, and burned them to ashes." He then explains this curious dream in the following manner:—"On the preceding evening I was visited by a friend, with whom I had a lively conversation upon Joseph the Second's suppression of monasteries and convents. With this idea, though I did not become conscious of it in the dream, was associated the visit which the Pope publicly paid to the Emperor Joseph, at Vienna, in consequence of the measures taken against the clergy; and with this again was combined, however faintly, the representation of the visit which had been paid me by my friend. These two events were, by the sub-reasoning faculty, compounded into one, according to the established rule, that things which agree in their parts also correspond as to the whole: hence the Pope's visit was changed into a visit made to me. The sub-reasoning faculty then, in order to account for this extraordinary visit, fixed upon that which was the most important object in my room, namely, the desk, or rather the papers it contained. That a diamond fell out of the triple crown was a collateral association, which was owing merely to the representation of the desk. Some days before, when opening the desk, I had broken the glass of my watch

which I held in my hand, and the fragments fell among the papers: hence no further attention was paid to the diamond, being a representation of a collateral series of things. But afterwards, the representation of the sparkling stone was again excited, and became the prevailing idea; hence it determined the succeeding association. On account of its similarity, it excited the representation of fire, with which it was confounded; hence arose fire and smoke. But, in the event, the writings only were burned, not the desk itself; to which, being of comparatively less value, the attention was not at all directed."

Another dream, which evidently arose from associations indulged in during the day, is related of Galileo. At a very advanced age, having lost his sight, he was conducted through a beautiful plain, in one of his daily walks, by his pupil Torricelli; when, having ascertained where he was, he said, "Once my eyes permitted me to enjoy the charms of these fields; but now, since their light is extinguished, these pleasures are lost to me for ever. Heaven justly inflicts the punishment which was predicted to me many years ago. When in prison, and impatiently languishing for liberty, I began to be discontented with the ways of Providence; Copernicus appeared to me in a dream; his celestial spirit conducted me over luminous stars, and, in a threatening voice, reprehended me for having murmured against Him at whose fiat all these worlds have proceeded from nothing. 'A time shall come,' said he, 'when thine eyes shall refuse to assist thee in contemplating these wonders.'"

It is impossible here not to be touched with the piety of the man, while we pity the credulity of the philosopher. That he should dream of Copernicus, who was not only

not always thinking of him, but was suffering a long and cruel incarceration, for espousing his views, is no more to be wondered at, than that a lover, who has passed the first hours of the preceding evening in the company of his mistress, should see her in his sleep; and, with regard to the prediction of cecity, it required no nocturnal visitor to acquaint him, that if he lived to extreme age he must become blind, like other men. What we know to be unavoidable we easily submit to; and what we believe to be possible we readily credit. The transmission of such thoughts, therefore, through the mind of the imprisoned astronomer, neither excites our surprise, astonishes our knowledge, nor contradicts our experience; and, condonation, without sacrifice of justice, may be safely extended to him for not having completely dissipated the darkness his adventurous spirit explored, his comprehensive genius illumined, and his corporal sufferings expiated, if they did not remove, if it be conceded, that when Europe was plunged in barbarism, and knowledge obscured by superstition, he alone rent the veil that concealed the altar of fact in the fane of science, and let in the light of truth upon the shrine of reason. Credulity, in Galileo, is therefore pardonable, because it was unavoidable.

In the second case, where a train of images are raised by association with bodily suffering, we generally find that the pain is more or less present, but that it is not referred to the real cause or time, but to some remote source or distant period. Dr. James Gregory, of Edinburgh, having applied a vessel of hot water to his feet, dreamed he was walking up the crater of Mount Etna. Now he had never visited that volcano; but in early life

he had been to Vesuvius, and, while walking up the summit, experienced a strong sensation of heat in the soles of his feet. It is remarkable, Dr. Abercrombie says, that the dream was not of Vesuvius, but of Etna, of which he had only read Brydon's description. It is probable, therefore, that the latter impression, being more recent, was more vivid in his recollection. At another time he dreamed of spending a winter in Hudson's Bay, and suffering much from cold. On awakening he found the bedclothes had fallen off him, and his dream was accounted for by his having read a very particular account of that colony during the winter. Dr. Reid relates of himself, that the dressing on a blister which he had applied to his head becoming ruffled, so as to produce pain, he dreamed he had fallen into the hands of savages, and that they were scalping him. Our readers must have seen the following case repeatedly referred to: we quote it from Dr. Abercrombie. He places it in that part of his subject where, in particular individuals, dreams may be produced by whispering in their ears when they are asleep. The subject of this case was an officer in the expedition to Louisburgh, in 1758, who had this peculiarity in so remarkable a degree, that his brother officers in the transport were in the habit of amusing themselves at his expense. One of these gentlemen narrated the facts to Dr. James Gregory, who recorded them in a MS. which his son gave to Dr. Abercrombie. They could produce any kind of dream in him by whispering in his ear, particularly if this was done by one with whose voice he was familiar. At one time, they conducted him through the whole process of a quarrel, which ended in a duel; and when the supposed parties met, a pistol being put into his

hand, he fired it, and was awakened by the report. On another occasion he fell asleep on the locker in the cabin, when he was made to believe that he had fallen overboard, and was exhorted to save himself by swimming. He struck out his arms as if in this act, and they then told him to dive for his life, for a shark was pursuing him. He instantly did so, and with such force as to throw himself off the locker, by which he was severely bruised. After the landing of the army at Louisburgh, he was found one day asleep in his tent, and evidently annoyed with the noise of the cannonade, at that time briskly carried on. He was then made to believe that he was engaged with the enemy, at which he expressed much fear, and betrayed a marked disposition to run away. They remonstrated against this act of cowardice, but at the same time increased his alarm, by imitating the groans of the wounded; and when he inquired, as he often did, who was killed, they named his particular friends. At last, he was told that the man next him in the line had fallen, when he instantly sprung from his bed, rushed out of the tent, and was only awakened from his sleep, and relieved from his fears, by falling over the tent-ropes. The most remarkable circumstance in this case was, that after these experiments he had no distinct recollection of his dreams, but only a confused feeling of oppression or fatigue; and used to say to his friends, that he was sure they had been playing him some tricks.

In speaking of this strange faculty, Dr. Elliotson remarks, that he has frequently amused himself by whispering in the ears of his sleeping friends, and enjoyed the surprise which his unexpected communications seemed to excite.

Space and time, as we have previously remarked in our chapter on the Physiology of Sleep, are nonentities in dreams. In fact, they do not exist in the mind of the dreamer. A friend of Dr. Abercrombie dreamed that he had crossed the Atlantic and passed a fortnight in America. On re-embarking to return, he fell into the sea; and, awakening with the fright, discovered that he had not been asleep ten minutes.

Another person dreamed that he had enlisted for a soldier, deserted, was apprehended, taken back, tried, condemned, and led out to execution. After preparations, usual on such occasions, a gun was fired, and he awoke with the report, and found that the noise in an adjoining room had induced the dream, at the same moment that it awakened him. Smellie has recorded a dream which happened to him from the same cause as that which made Dr. James Gregory dream that he was in Hudson's Bay. He saw a group of winged angels descending from the sky, and one, which seemed to lead and command, held a golden trumpet in his hand. When near the earth he sounded this trumpet, and announced the last day, and that the quick and the dead were to be judged. Astonishment and anxiety arrested the living. They stood motionless, and looked aghast. "A change came o'er the spirit of his dream." He saw the dead rising in myriads around him, and particularly remarked in the Grey-friars Churchyard, in Edinburgh, that hundreds of both sexes pushed one another out of the same graves. The day was cold and gloomy, and the terrified myriads who had risen from their graves stood shivering and awe-stricken. In a moment, in the twinkling of an eye, the scene again changed, and he beheld an immense number of leaden

pipes filled with cold water, and another trumpet sounded, and another angel proclaimed, that the damned were to have their limbs immersed in leaden pipes, instead of being burned in everlasting flames, for ever. Terrified with the awful vision he awoke exceedingly cold, and found that his body was uncovered. "This simple incident," he says, "produced the whole scenery I have represented." (PHIL. OF NAT. HIST.)

The same author relates a case similar to that of the officer already given, of one Mr. Thomas Parkinson, a medical student of Edinburgh. This young man was accustomed to talk and answer questions in his sleep, and Smellie and his friends diverted themselves at his expense, in the following manner. They knew that he was in love with a young lady in Yorkshire, and whispered her name repeatedly in his ear. He soon began to toss his hands, and to speak incoherently, but gradually became more calm and collected, while his imagination followed the desired direction. He conceived himself stationed under the lady's window, and repeatedly upbraided her for not appearing and speaking to him, as she had so often done on former occasions. At last, he became impatient, started up, laid hold of books, shoes, and every thing he could easily grasp, and thinking his mistress was asleep, threw them at the wall of the opposite side of the room, hoping to awaken her. By what he said they learned that he fancied he was in a street where his mistress lived, trying to rouse her, and after tiring himself with fruitless efforts, he went quietly into bed without waking. Next day he was told what had happened, when he said he had only a faint recollection of having dreamed of his mistress.

In the third case, where dreams consist of the revival of old associations, respecting things which had entirely passed from the mind, or been apparently forgotten, we find a person unable to recollect a fact, to bring to memory the drawer where he has placed a thing, or to remember to whom he has paid, or what he has done with, a sum of money. In these cases there would seem to be a sort of inductive faculty—the sub-reasoning power of Maas—called into action, or, to speak more correctly, a greater number of cerebral organs excited to activity. Of this description of dream is that related by Sir Walter Scott, in the Notes of his last edition of the WAVERLEY NOVELS; and Dr. Abercrombie gives the following instance as another example:—"A gentleman connected with a bank in Glasgow, while employed in the occupation of cashier, was annoyed by a person out of his turn demanding the payment of a check for six pounds. Having paid him, but with reluctance, out of his turn, he thought no more of the transaction. At the end of the year, which was eight or nine months after, a difficulty was experienced in making the books of the bank balance, in consequence of a deficiency of six pounds. Several days and nights were wasted in vain endeavours to discover the source of the error, and the discomfited and chagrined cashier one night retired to his bed, disappointed, and fatigued. He fell asleep, and dreamed he was at his bank, and once again the whole scene of the annoying man, and his six-pound check, arose before him, and on examination it was discovered that the sum paid to this person had been neglected to be inserted in the book of interests, and that it exactly accounted for the error in the balance.

The following the doctor thinks analogous to those cases

of delirium, of which we shall speak in our chapter on the Nervous System, in which attainments long since forgot, or events but indistinctly remembered, are recollected, concentrated, and related. A gentleman in his youth was very fond of the Greek language, in which he had made some proficiency; but being afterwards engaged in active pursuits, he neglected and soon ceased to be able to read it. Yet he often dreamed that he not only read Greek works, but that he understood them. These, of a similar nature, we give in Dr. Abercrombie's own words:—A gentleman of the law, in Edinburgh, had mislaid an important paper, connected with the conveyance of a property, which was to be settled on a particular day. Most anxious search had been made for it, for many days; but the evening of the day previous to that on which the parties were to meet, for the final settlement, had arrived, without the paper being discovered. The son of the gentleman then went to bed, under much anxiety and disappointment, and dreamed, that when the missing paper was delivered to his father, his table was covered with papers connected with the affairs of a particular client. He awoke under the impression, went immediately to a box appropriated to the papers of that client, and there found the paper they had been in search of, which had been tied up by mistake in a parcel to which it was no way related. Another individual, connected with a public office, had mislaid a paper of such importance, that he was threatened with the loss of his situation, if he did not produce it. After a long but unsuccessful search, under intense anxiety, he also dreamed of discovering the paper in a particular place, and found it there accordingly. (INQUIRIES ON THE INTELLECTUAL POWERS.)

There is also a remarkable case recorded of a man, who, on the investigation of a late murder committed in the North of Scotland, voluntarily came forward, and swore that he had had a dream in which was represented to him the spot where the pack of the murdered man, a pedlar, was to be found. On searching, it was discovered very near the spot, and the first impression was, that he had murdered the man; but on conviction of the real murderer, he was acquitted on his confession, and the manner in which his dream was explained seems satisfactory. He and the murderer had passed several days together subsequent to the murder, in a constant state of intoxication; and, it is supposed during that period, the fact of the murder, and the place where the pack was hid, were communicated to him. This is a reasonable and sensible explanation. It did not suit, however, the views of many persons, who looked upon it as a direct interference of Providence, to discover the murderer; as if it would not have been better for Providence to have excited this dreamer in the first instance to prevent the murder, by which the life of an innocent man would have been spared, rather than permitting the murder to be perpetrated, merely that a guilty man might be punished!

In the fourth case, where a strong propensity of character is developed, or a strong mental emotion embodied, and by some natural coincidence is fulfilled, we find recorded many very extraordinary dreams, which, we confess, we are unable to explain, even by the aid of Gall. Mr. Combe mentions a murderer, who had dreamed of committing murder, many years before he perpetrated the act.* Macnish relates a dream of himself, which is

* This may be explained on the fact of the organ of DESTRUCTIVENESS being unusually developed, or unusually excited.

certainly extraordinary, if he really never heard of or suspected the ill-health of his relation. "I was in the county of Caithness," he says, "when I dreamed that a near relation of my own, residing in Glasgow, had suddenly died; and immediately therefore awoke in a state of inconceivable terror, similar to that produced by a paroxysm of night-mare. The same day, happening to be writing home, I mentioned the circumstance in a half-jesting, half-earnest way. To tell the truth, I was afraid to be serious, lest I should be laughed at, for putting any faith in dreams. However, in the interval between writing and receiving an answer, I remained in a state of most unpleasant suspense. I felt a presentiment that something dreadful had happened, or would happen; and although I could not help blaming myself for a childish weakness in so feeling, I was unable to get rid of the painful idea which had taken such rooted possession of my mind. Three days after sending away the letter, what was my astonishment, when I received one, written the day subsequent to mine, and stating that the relative of whom I had dreamed had been struck by a fatal shock of palsy the day before — viz., the very day on the morning of which I had beheld the appearance in my dream! My friends received my letter two days after sending their own away, and were naturally astonished at the circumstance. I may state, that my relation was in perfect health before the fatal event took place. It came upon him like a thunderbolt, at a period when no one could have the slightest anticipation of danger." (PHIL. OF SLEEP.)

The following case from BLACKWOOD'S MAGAZINE, the nineteenth volume, is curious, but is very easily explained, by the natural dread which all women have

of water, and from the danger which frequently attends boating in the Frith of Forth:—"Being in company the other day, when the conversation turned on dreams, I related one, which, as it happened to my own father, I can answer for the perfect truth of it. About the year 1731, my father, Mr. D. of K——, in the county of Cumberland, came to Edinburgh to attend the classes, having the advantage of an uncle in the regiment then at the Castle, and remained under the protection of his uncle and aunt, Major and Mrs. Griffiths, during the winter. When spring arrived, Mr. D. and three or four young gentlemen from England, (his intimates,) made parties to visit all the neighbouring places about Edinburgh, Roslin, Arthur's Seat, Craig-Millar, etc. etc. Coming home one evening from some of those places, Mr. D. said, 'We have made a party to go a-fishing to Ince-Keith to-morrow, if the weather be fine, and have bespoke our boat; we shall be off at six.' No objection being made, they separated for the night. Mrs. Griffiths had not been asleep long, till she screamed out, in the most violent, agitated manner, 'The boat is sinking, save, oh save them!' The Major awakened her, and said, 'Were you uneasy about the fishing party?' 'O, no,' said she, 'I had not once thought of it!' She then composed herself, and soon fell asleep again: in about an hour she cried out in a dreadful fright, 'I see the boat is going down!' The Major again awoke her, and she said, 'It has been owing to the other dream I had; for I feel no uneasiness about it.' After some conversation they both fell sound asleep, but no rest could be obtained for her: in the most extreme agony she again screamed, 'They are gone; the boat is sunk!' When the Major awakened her, she said, 'Now I

cannot rest; Mr. D. must not go, for I feel, should he go, I should be miserable till his return; the thoughts of it would almost kill me.' She instantly arose, threw on her wrapping-gown, went to his bed-side, (for his room was next their own,) and with great difficulty she got his promise to remain at home. 'But what am I to say to my young friends, whom I was to meet at Leith at six o'clock?' 'With great truth you may say your aunt is ill, for I am so at present; consider, you are an only son, under our protection, and should any thing happen to you, it would be my death.' Mr. D. immediately wrote a note to his friends, saying he was prevented from joining them, and sent his servant with it to Leith. The morning came in most beautifully, and continued so till three o'clock, when a violent storm arose, and in an instant the boat, and all that were in it, went to the bottom, and were never heard of, nor was any part of it ever seen."

The classical reader will here recollect the dream of Hecuba, and the warning of Calphurnia; but, in these instances, the premonitions were useless, as Paris lived to be the cause of the destruction of Troy, and Cæsar was assassinated by his friends.

The custom of giving away penny loaves, annually, on the 11th March, at Newark-upon-Trent, owes its origin to Alderman Clay having dreamed, three successive nights, that his house would be burned by the Parliamentary forces. He removed, his house was burned, and he escaped the danger; but as the town at the time the Alderman dreamed that the house would be burned was actually bombarded by Cromwell's army, it does not appear to us that a dream was necessary to enforce that

upon a prudent citizen, which common sense ought to have dictated, namely, speedy removal. But this did not occur to the Alderman; and, as Smellie justly remarks, as the notion that dreams are suggested by superior beings is founded partly in ignorance, and partly in a fond regard in which men are apt to indulge for everything that relates to themselves, shall we be surprised that the Alderman, who was probably a very important personage in his time, should have believed that to be a Divine interposition, which was but the natural conclusion of any thinking man?

However, the poor of Newark are the gainers, and we have therefore no right to regret the Alderman's ignorance; as, had he been better informed, or not so pious, he might have spent the principal from which the annual hundred pounds is derived, and nobody been the wiser or the better. As it is, every poor man in Newark is sure, at least one day in the year, of having a penny roll for breakfast, which is more than the poor can say for certain of any morning in most great cities.

Mr. Taylor, in his little work ON PREMATURE INTERMENT, to which we have frequently alluded, relates the following uncommon dream:—

"The late Joseph Wilkins, a dissenting clergyman of Weymouth, in Dorsetshire, had the following remarkable dream, which may be found in a short account of his life. We quote his own words:—One night, soon after I was in bed, I fell asleep, and dreamed I was going to London. I thought it would not be much out of my way to go through Gloucestershire, and call upon my friends there. Accordingly, I set out; but remember nothing that happened by the way, till I came to my father's house, when

I went to the door, and tried to open it, but found it fast; then I went to our back door, which I opened, and went in; but, finding all the family were in bed, I went across the rooms only, and walked up stairs, entered the room where my father and mother were in bed, and, as I passed by the bed in which my father lay, I found him asleep, or thought he was so; then I went to the other side, and, as I just turned the foot of the bed, I found my mother awake, to whom I said these words, 'Mother, I am going a long journey, and am come to bid you good bye;' upon which she answered me, in a fright, 'Oh, dear son, thee art dead!' with which I woke, and took no notice of it more than a common dream, only it appeared to me very perfect, as sometimes dreams will. But, in a few days after, as soon as a letter could reach me, I received one by the post from my father; upon the receipt of which I was a little surprised, and concluded something extraordinary must have happened, as it was but a little before I had had a letter from my friends, and all were well: but, upon opening it, I was still more surprised; for my father addressed me as though I were dead, desiring me, if alive, or whosoever hands the letter might fall into, to write immediately. But if the letter found me living, they concluded I should not live long, and gave this as a reason for their fears: that, on such a night, (naming it,) after they were in bed, my father asleep, and my mother awake, she heard somebody try to open the fore-door, but, finding it fast, he went to the back door, which he opened, and came in, and went directly through the room up stairs, and she perfectly knew it to be my step; came to her bedside, and spoke to her these words—'Mother, I am going a long journey, and am come to bid you

good bye;' upon which she answered me, in a fright, 'O! dear son, thee art dead!' (which were the very circumstances and words of my dream;) but she heard nothing more—she saw nothing, neither did I, in my dream, for it was all dark. Upon this, she awoke my father, and told him what had past; but he endeavoured to appease her, persuading her it was only a dream; but she insisted on it, it was no dream, for that she was as perfectly awake as ever, and had not had the least inclination to sleep since she had been in bed, (from which, I am apt to think, it was at the same instant with my dream, though, the distance between us was about one hundred miles, but of this I cannot speak positively.) This affair happened whilst I was at the academy at Ottery, in the county of Devon, and I believe in the year 1754; and, at this distance, every circumstance is very fresh in my mind. I have since had frequent opportunities of talking over the affair with my mother, and the whole circumstance was as fresh upon her mind as it was upon mine. I have often thought, that her sensation, as to this matter, was stronger than mine; and, what some may think strange, I cannot remember any thing remarkable happened therein; and that this is only a plain, simple narrative, of matter of fact."

A double dream, very similar to this, is related by Mrs. Mathews, in her MEMOIRS of her husband. Mathews had gone late to bed, after performing at the theatre, and was unable to sleep. He had no light, and after tossing about for some time, he fancied he heard a rustling at the bedside, which induced him to turn his head, when he saw his first wife, who was dead, standing by the bedside, dressed as she was in life; she smiled and bent forward,

as if to take his hand, but shrinking from the contact, he threw himself out of bed, upon the floor, and was found by the landlord in a fit. There was nothing surprising in this; but at the exact hour, at a remote distance, a vision of the same kind caused the present Mrs. Mathews to be discovered precisely in the same situation. She tells us—"The same sleepless effect, the same cause of terror, had occasioned me to seize the bell-rope, in order to summon the people of the house, which giving way at the moment, I fell with it in my hand upon the ground. My impressions of this visitation (as I persisted it was) were exactly similar to those of Mathews's."

Here is a dream, however, of another nature. A gentleman was affected with aneurism of the popliteal artery,* for the cure of which he placed himself under the care of two eminent surgeons of Edinburgh, who determined on an operation, and fixed the day. About two days before the operation, his wife dreamed that a change had taken place in the disease, which would, therefore, render the operation unnecessary. On examining the tumour in the morning, they were astonished to find that it had disappeared, or, in other words, Nature had effected a spontaneous cure. As a spontaneous cure of this species of aneurism is very rare, this dream may be considered very remarkable.

Beaumont records a case from Debes, analogous to this; but, in our opinion, combined with somnambulism. A person named Jacob Oluffon being then at Giow, in

* The popliteal artery passes under the bend of the knee, and supplies the leg and foot with blood. Popliteal aneurism is a disease common to post-boys, jockeys, and coachmen, generally induced from the position which they occupy in riding and driving.

Osteroe, (one of seventeen small islands subject to Denmark,) fell ill; and continued so for a fortnight. On the fourteenth day of his sickness, as he lay asleep, a person came to him in shining clothes, and asked him where his pain was? But he did not answer him; upon which the nocturnal visitor "stroked him with his hand along his breast, and round about, whereby he was presently healed."

In the following case, we find, contrary to those we have already related, that a dream was probably the cause of prevention of a murder:—A lady dreamed repeatedly that an aged female relative was murdered by a black servant. Impressed with this horrible presentiment, she went to the house of her relative, and prevailed on a gentleman to watch in the adjoining room during the following night, when, singular to relate, about three o'clock in the morning, the black servant was detected on the stairs, under pretence of carrying coals to light his mistress's fire. As this could not have been his real purpose, at that hour in the morning, and in the midst of summer, the scuttle was searched, and a large knife found concealed under the coals!

The next we shall adduce is of a more painful and mysterious character. Dr. Abercrombie assures us "that its accuracy may be relied on, in all its particulars." Two sisters had been for some days attending their brother, who was suffering from common sore throat, severe and protracted, but not considered dangerous. At this time one of them obtained the loan of a watch from a friend, her own being out of repair. As this watch was a kind of heirloom in the family of the lady from whom it had been borrowed, particular caution was given, lest it should

meet with some injury. Both of the sisters slept in a room adjoining that of the brother's, and one night the elder woke the younger in extreme alarm, and told her, that she had dreamed, that "Mary's watch had stopped, and that, when she had told her of it, she had replied, Much worse than that had happened, for Charles's breath has stopped also." To quiet her agitation, the younger immediately rose, proceeded to her brother's room, found him asleep, and the watch, which had been carefully put away in a drawer, going correctly. The following night the same dream occurred, accompanied by the same agitation, and was quieted in the same manner, the brother being sound asleep, and the watch going. In the morning, after breakfast, one of these ladies having occasion to write a note, proceeded to her desk, while the other sat with her brother in the adjoining room. Having written and folded the note, she was proceeding to take out the watch, which was now in the desk, to use one of the seals appended to it, when she was astonished to find it had stopped, and, at the same instant, a scream from her sister hurried her to the bedside of her brother, who to her grief had just breathed his last! The disease was considered to be progressing favorably, when he was seized with a sudden spasm, and died of suffocation. The coincidence between the stoppage of the watch and the death of the brother, is the most perplexing circumstance of this case; since the mere stopping of the watch, or the death of the brother, might have been explained on very rational principles. Or had the watch stopped before or after the death of the brother, it might have been easily supposed to have been forgotten to be wound up, or it might have suffered some injury from the hurry and trepidation incidental to anguish and

bereavement; but as the case is related, it is certainly a most extraordinary, surprising, and mysterious incident.

The cases last recorded rest on the authority of Dr. Abercrombie. The following we add, on the testimony of authors in whom we have a right to place an equal confidence:—

Gassendi, in his Life of Peireskius, relates the following dream:—Peireskius, (Nicolas Claude Fabri de Peirèse,) returning in the year 1610 from Montpelier to Nismes, in company with a person of the name of Rainer, who slept in the same chamber with him on the road, was heard by the latter muttering something unusual in his sleep, on which he woke him, and inquired what was the matter? Oh, replied Peireskius, from what a pleasant dream have you awakened me! I was dreaming that I was at Nismes, and that a goldsmith offered me a golden medal of Julius Cæsar for four crowns, and I was paying him the money for it, when, upon your awakening me, both goldsmith and medal vanished. Thinking no more of the dream, our travellers arrived at Nismes, and Peireskius, to amuse himself, strolled through the town while dinner was preparing, and by accident went into a goldsmith's shop, and inquired if he had any rarity for sale? He replied, that he had a Julius Cæsar of gold. He then asked the price, and was answered four crowns, which he paid him, and took the medal. Peireskius, when telling the dream, used to add, says Gassendi, that "if another man had related it, he would not have believed him."

It is related by Amyraldus, that M. Calignan, Chancellor of Navarre, dreamed three successive times in one night, at Berne, that a voice called to him, and bid him

leave the place, as the plague would soon break out in that town. That, in consequence, he moved his family; and the end justified his flight, for the plague broke out, and killed a great many persons. Simlernus says, in his LIFE OF GESNER, that Gesner dreamed he was bitten by a serpent on a particular spot, when he said, in the morning, he would be seized with a pestilential carbuncle, and a few days after, five days before his death, a carbuncle, of which he died, appeared upon his left breast.

Fracastorius tells a story of Marcus Antonius Flaminius, very similar to one related by Dr. Abercrombie, of a lady who having sent her watch to be mended, and not being able to get it back, dreamed that the boy, who had been sent with it from the maker, had let it fall, and broken it, so that he was afraid to return it to her. He says, that Flaminius, being at Genoa, borrowed a book of a friend to divert himself; which having read, he laid on a couch with several other books, but when the person who lent it applied for it, it could not be found. At night he dreamed that a maid-servant in the house took the book from the couch, and as she was placing it on the table, it fell and broke one side of the cover, upon which she hid it, from fear, in a certain place. Flaminius, on rising in the morning, went to the place and found the book, and on the maid being charged with the accident, confessed it had happened as Flaminius had dreamed. Cotton Mather, in his ECCLESIASTICAL HISTORY OF NEW ENGLAND, relates the following melancholy fulfilment of a dream. He says, that within a furlong of his house, a physician lived, who dreamed for three successive nights that he was being drowned, and on the third night that he was so agitated, that he became covered with perspi-

ration, and left his room, to tell his family how much he had been alarmed. Some time after two friends came to him and pressed him to go on the water with them. He at first refused, but despising his fears, he accompanied them, and was drowned that night. Camerarius, in his LIFE OF MELANCTHON, says that Nessenus, one day after dinner, in a gentle sleep, dreamed that he was drowned, by the boat, in which he generally diverted himself on the water, striking on the trunk of a tree. This dream he told to Philip Melancthon, who casually called, at the same time deriding the belief in the premonition of dreams. However, that same evening, going on the water according to custom, the boat was upset, and he was drowned.

There is a curious account given by William Smythies, curate of St. Giles'; Cripplegate, in 1698, of the discovery of a murder, by the dreams of one Mrs. Greenwood, but the narrative is too long for insertion; but the following extraordinary anecdote of the great Harvey is worth repeating. When young, he set out on his way to Padua with several friends, and arrived at Dover, where he shewed his passport as the others did to the governor; but this person, looking at him, said he must not go, for he had orders to detain him a prisoner. The doctor desired to know the nature of the charge against him, but this was refused, and he had the mortification to see his friends depart without him. In the meanwhile a dreadful storm arose, and the boat, with all her passengers, was lost. The next day, the governor told Harvey, who was slightly known to him, that he had a warning in a dream to prevent him from crossing over to Calais. (AUBREY'S MISCELLANIES.)

Alexander ab Alexandro tells us, that a young man of

whose education he had care, and residing with him, had a dream, in which he saw his mother about to be buried, during which dream he was so much agitated that he caused him to be awakened, when he related his dream. Alexander noted the night and hour of the dream, and shortly after, news having arrived of the death of the young man's mother, the time was found to correspond with that of his dream. (GEN. DIER. l. i. c. 2.) Cardan relates a variety of cases. They will bear extracting, as they in no way exceed those in probability which Dr. Abercrombie has recorded. He says that Jonnes Maria Maurosenus, a Venetian senator, and his particular friend, while governor in Dalmatia, saw in a dream one of his brothers, to whom he was much attached; that the brother embraced him, and bid him farewell, because he was going into the other world. Maurosenus, having followed him a long way weeping, awoke at last in tears, and experienced much anxiety on account of this brother, who was at Venice. On the third day he received letters from Venice, signifying that his brother Domatus, of whom he had dreamed, died on the night and hour of his dream, after an attack of a pestilential fever, which carried him off in three days. (SYNES. SOMN. l. iv. c. 20.) Further on he says, that a countryman of his, Ludovicus Madius, sleeping in the same room with a soldier, was awakened by his calling out in his sleep; when, asking what ailed him? he said, he dreamed he had received a severe wound on his head, and that he was dying. As his master, Madius, was attached to him, he bid him not to stir out of doors; but his comrades, anxious to pay a visit to the enemy, he forgot his dream, and accompanied them; when, unfortunately for him, the enemy appearing,

his comrades ignobly fled, and he was killed, his head being cloven asunder. Again, says the same author, "M. Antoninus Taurellus was admonished in a dream wherein he was himself a-drowning, whereupon he resolved not to go a-swimming that day; but forgetting his dream, and returning to his swimming, he was drowned."

A double dream similar to that related by Taylor of Joseph Wilkins, the dissenting minister, but, unlike that, demonstrative in effect, and not abortive in consequence, is preserved by St. Austin. "One Præstantius desired the solution of a doubt of a philosopher, who refused to give it to him. The night following Præstantius, being awake, (that is, fancying himself awake, we suppose,) saw this philosopher stand by, and solve the doubt, and presently go away. Præstantius, meeting him the next day, asked him why, having refused to solve the question the day before, he came to him at midnight of his own accord, and solved it? To which the philosopher replied, I came not truly, but in my dream I seemed to do this to you." In the EXERCITATIONS ON TOBACCO, by Magnenus, published at the Hague in 1658, we have the following explanation of such dreams, which, making allowance for the quaint style in which his ideas are clothed, his opinion will not be found unphilosophical. He says, "Such dreams as these happen, for that the person that dreams, representing to himself such a man, endeavours to produce a sense of things not beneath the authority of that man, or the idea he has of him. Hence, sometimes, they have such conceptions, which are owing, not to themselves, but to the reputation of so great a man. Wise Epictetus very well knew this, who commands, that our mind be

raised by some man of great repute, which we may propose to ourselves to be imitated, and may hear and behold him as present. 'Propose to yourself,' says he, 'what Socrates, or Zeno, would do in such a case.' (ENCHIR. c. 8.) He adds beneath: "That sagacious virtue, which excites itself in man, freely discovers itself by an instinctual impetus, and I have often perceived in my sleep what exactly fell out the next day, so, when I have gone to sleep with a fixed thought on a person sick, a meet remedy has been represented to me in my dream, which, nicely weighed in my judgment the next morning, I have thought it excellent, and given it with great success. I had read, the same had happened to Hippocrates and Galen, but doubted of its truth. But I have found by my own experience, that a nature prone to a business, finds most compendious ways for it, which others scarce ever attain, INVITA MINERVA, as Ptolemy says, Cent. 4."

The same remarks that Cabanis made on Franklin's dreams will apply here with the same force. Magnenus forgot, or rather did not know, that the same internal organs, which were in activity during the day, had continued the work during the night, while the external senses were seeking that repose, which the exertions of the morning had rendered imperative. Is it not singular, that so many men should reason on the same subject so correctly, yet refer the consequence to so many various causes? A knowledge of the plurality of the organs reconciles all these inconsistencies.

To come down to our own times, as it were, and our own countrymen, in the LIFE OF SIR HENRY WOTTON, by Izaak Walton, we find a dream related of Sir Henry's father,

Thomas Wotton:—A little before his death he dreamed that the University of Oxford was robbed by townsmen and poor scholars, and that the number was five; and being that day to write to his son Henry, at Oxford, he thought it worth so much pains, as by a postscript to his letter, to make a slight enquiry of it. The letter was written from Kent, and came to his son's hands the very morning after the night in which the robbery was committed, for the dream was true, and the circumstances, though not in the exact time. And when the city and University were both in a perplexed inquest of the thieves, then did Sir Henry Wotton shew his father's letter. And, by it, such light was given to this work of darkness, that the five guilty persons were presently discovered and apprehended, without putting the University to so much trouble as the casting of a figure. Walton also says, that Thomas Wotton, and his uncle Nicholas Wotton, who was Dean of Canterbury, both foresaw and foretold the day of their deaths. And Beaumont informs us, that Selneccerus, in his CALENDAR OF CHRISTIAN KING OF DENMARK, relates, that the king foretold his death both to his Chaplain, M. Paulus Noviomagus, and to D. Cornelius, his physician; and Jacobus Scutellarius, a famous astronomer of Prague, physician to the Emperor Rodolphus the Second, had a foreknowledge of his death eight days before it happened, and affirmed for certain he should die on the 10th of December, Anno 1589. Again, that famous astronomer, Leonardus Thurnisser, certainly foreknew the day of his death, made his will, and commanded his landlord, that he should bury him by the side of Albertus Magnus, which was done. He died the 9th of July, Anno 1596.

There is at Rome a monument, with the following inscription:—

TO

SERAPHINUS OBDUCTIUS STRANCIONICUS,

A FAMOUS PHYSICIAN, A MOST INGENIOUS PROPHET,

AND A MAN SKILLED IN ALL MANNER OF LEARNING,

WHO, BEING SEIZED WITH A VEHEMENT FEVER,

FOREKNEW, AND MOST CONSTANTLY FORETOLD,

THE DAY AND HOUR OF HIS DEATH.

THEOPHILUS, HIS SON, ERECTED THIS MONUMENT:

HE DIED THE NINTH OF THE CALENDS OF SEPT.

ANNO 1538,

HAVING LIVED FIFTY-FOUR YEARS, NINE MONTHS,

AND TWENTY-TWO DAYS.

The supposed apparition of Sir George Villiers to Parker, several times in a dream, desiring him to go to his son, the duke of Buckingham, afterwards stabbed by Felton, and warn him of his danger, was, no doubt, an unusually active condition of the cerebral organs, induced from constantly dwelling on the same subject. Parker had been in his youth obligated to Buckingham's father, and, remembering this, when he heard the incessant maledictions which were vented by all classes of the people against him, naturally feared some misfortune would befal the ill-fated favorite. It is not surprising, therefore, that he should have thought he saw, in his dream, what occupied, probably, three fourths of the period of his waking hours. Lily's statement does not differ materially from Lord Clarendon's, and a careful perusal of both accounts will cause this dream to be no longer treated as

a mere fiction, invented after the assassination of the Duke. The respectability of the parties preclude such a suspicion, nor is the story, after all, one whit more extraordinary than those vouched for by Dr. Abercrombie.

We abridge the following from BELL'S NARRATIVE prefixed to LUTHER'S TABLE, printed in English, in 1682, as a dream of a similar nature. Having informed us how the German copy was discovered, after it had been concealed under ground for fifty years, the edition being suppressed by Rodolph the Second, so that it was death for any person to keep a copy, and having related how Caspar Van Spar, a German gentleman, with whom he was intimate, had discovered it, and transmitted it to England to him, to translate into English, he proceeds to say, that he frequently attempted the translation, but was always prevented from proceeding by some unforeseen business, or unexpected occurrence, when about six weeks after receiving the copy, being in bed, and his wife beside him but asleep, and he awake, an old man appeared at his bedside, dressed in white, with a long beard, who took him by the ear, and said, "Sirrah! will you not take time to translate that book, which is sent to you out of Germany? I will shortly provide for you both place and time to do it;" and having uttered these words he vanished. Being much alarmed, a profuse perspiration suffused his skin, and the agitation awakening his wife, she asked him what was the matter? when he told her what he had seen and heard. But 'never regarding visions nor dreams,' he forgot the circumstance. But one Sunday, a fortnight after, being at his lodgings in King-street, Westminster, and at dinner, two messengers from the Council Board presented themselves, and produced a

warrant to take him to the Gate-house, Westminster, there to be confined till further orders from the Lords of the Council. And upon this warrant, he further informs us, he was kept there a close prisoner for ten years, five of which he passed in translating the Table, "having good cause to be mindful of the old man's saying—'I will shortly provide for you both place and time to translate it.'"

Perhaps the case might have been better arranged under the head of Catalepsy; but it is doubtful, though he says so himself, if he was awake. It is more probable that the whole was a dream caused by the condition of public affairs, in which, at that time, he was deeply implicated—for he had been sent into Germany by James the First in 1626—conjoined with anxiety to finish the translation, which he had undertaken at the request of Caspar Van Spar.

Beaumont relates the following case, which will not surprise after those we have given:—"An ancient gentleman," he says, "now living in London, has told me, that many years since he had occasion to make a journey into the North, and that being abed in his inn, the first night of his journey, a friend of his, dead not long before, appeared to him in his dream, and told him he had lodged one thousand pounds in the hands of a person, whom he named, (and who was well known to the gentleman I write of,) for the use of his daughter; and he desired him that, upon his return to London, he would put the person in mind of it, and desire him to take care to pay the money. The gentleman, after his return, took an opportunity to wait on the said person, and, after common discourses were over, told him, that such a friend of theirs

whom he named, lately dead, had communicated a secret to him, viz., that he had lodged one thousand pounds in his hands for the use of his daughter, and that as she would grow marriageable in a short time, he might do well to pay it. The person freely owned the thing, and paid the money accordingly; the gentleman from whom I had this relation, having known nothing of it but in his dream. And this is remarkable, that the gentleman who paid the money chanced to fail in about three months after."

The story of Lord Lyttleton is so well known, that it need be only alluded to. That of Lord Roscommon, related by Aubrey, is not so general, and will bear repetition:— "The Lord Roscommon, being a boy of ten years of age, at Caen, in Normandy, one day was, as it were, madly extravagant in playing, leaping, getting over the tables, boards, etc. He was wont to be sober enough. They said, 'God grant this bodes no ill-luck to him!' In the heat of this extravagant fit he cries out, 'My father is dead!' A fortnight after, news came from Ireland that his father was dead. This account I had from Mr. Knolles, who was his governor, and then with him—since Secretary to the Earl of Stafford; and I have heard his Lordship's relations confirm the same." This, strictly speaking, was a case of catalepsy or ecstasy, but we have inserted it here to introduce the remarks of Dr. Samuel Johnson on similar phenomena. "The present age," says the lexicographer, in his LIFE OF ROSCOMMON, "is very little inclined to favor any accounts of this kind, nor will the name of Aubrey much recommend it to credit; it ought not, however, to be omitted, because better evidence of a fact cannot easily be found than is here offered; and it must be by preserving such relations that we may at last judge how much they

are to be regarded. If we stay to examine this account, we shall see difficulties on both sides: here is the relation of a fact, given by a man who had no interest to deceive, and who could not be deceived himself; and here is, on the other hand, a miracle which produces no effect; the order of nature is interrupted, to discover, not a future, but only a distant event, the knowledge of which is of no use to him to whom it is revealed. Between these difficulties, what way shall be found? I believe what Osborne says, of an appearance of sanctity, may be applied to such impulses, or anticipations as this. 'Do not wholly slight them, because they may be true; but do not wholly trust them, because they may be false.'"

Dr. Abercrombie thinks that persons seldom dream of sounds; but we are of a contrary opinion. Who has not dreamed of listening to beautiful and melodious music? —and whence the line which has passed into an adage, "of music sweet as songs in lovers' dreams," if we seldom dream of sounds? Our experience contradicts the Doctor's assertion. He also thinks, that we seldom dream of events or characters in ancient history; but adds, that "Dr. Beattie indeed mentions having dreamed of crossing the Alps with Hannibal; but such dreams, I think, are very rare." In this particular we dissent again from him. We have dreamed of Julius Cæsar, and once of Mark Antony; but this may be easily explained, when we add that the tragedy of Julius Cæsar was the first we ever read, and consequently, for years, it took a firm hold of both memory and imagination. Smellie also dreamed of seeing angels; and a gentleman, mentioned by the Doctor himself, dreamed of the devil threatening to burn him; and are not these historical characters?

We suspect that Dr. Abercrombie wrote that part of his very interesting work without that mental revision which so eminently distinguishes other portions of his valuable treatise. But this inattention is the more to be noticed in one who justly stands so high in the profession; because even his errors of opinion are apt to be adopted and cherished. When Sir Richard Blackmore engaged in the study of medicine, he inquired of Sydenham what authors he should read? the Doctor jocularly replied, DON QUIXOTE—it is a very good book, I read it still." Johnson very properly remarks, after repeating the anecdote, "the perverseness of mankind makes it often mischievous in men of eminence to give way to merriment; the idle and the illiterate will long shelter themselves under this foolish apophthegm;" and with the alteration of a very few words, the quotation may be made to apply to the eminent physician, to whose inattention, or carelessness, we humbly allude.

As we must now bring our labors on this subject to a close, a few words on the similarity of the phenomena of dreams, and the delusions of mania, will possibly assist our readers in coming to a correct idea of what we suppose to be the cause of dreams, namely, an over-excited condition of one or more organs of the brain.

Dreaming and insanity are nearly allied; for maniacs are inundated with a flow of thoughts, a superabundance of ideas, and a catenation of impressions, which invert order, escape arrangement, and defy control, exactly similar to images in dreams. Their cerebral organs riot in confusion; they exhibit brilliant and burning flashes of wit, but they are lost in the coruscations which follow;

they enjoy glimpses of elevated genius, but the prospect is soon obscured; they sometimes reason acutely, but their premises are unfounded; they talk and write vigorously, but their images are unconnected by detail; their reasoning unsupported by evidence, and their arguments unrestrained by any rule of precedent, mode of thought, or law of logic. Is not this the case in dreams? How, then, can persons be found who say, that we reason, argue, think, and even act in our dreams with more judgment and acumen than in the waking state? Yet, this is the recorded opinion of one great man— nay, of the greatest man of his age—HENRY LORD BROUGHAM! but if his Lordship's opinion cannot be admitted, it is at least entitled to respect.

Have we not a similar instance of error of judgment in Franklin? Cabanis says, that he was informed by him, that he (Franklin) had been several times assisted in dreams on the issue of affairs in which he had been engaged during the day. On this Cabanis remarks, that his vigorous mind, otherwise free from prejudice, could not quite secure him from a superstitious notion with respect to these premonitions. He did not take into consideration, that his profound prudence and rare sagacity still characterized the operations of his brain during sleep. In corroboration of this view of the subject, we adduce what is told of Condillac—that while writing his COURS D'ETUDES, he was frequently obliged to leave a chapter incomplete, and that on awakening he found it on more occasions than one finished in his head. Voltaire assures us, that, like La Fontaine, he many times made verses in his sleep, which he remembered when awake; and Tartini

composed his DEVIL'S SONATA in a dream, in which Satan appeared, and challenged him to a competition on his own violin. (HUMAN PHYSIOLOGY.)

Dr. Mason Good tells us, that the Rev. William Jones, of Nayland, in Suffolk, composed a beautiful ode of six stanzas in his sleep, and set the same to very agreeable music; the impression of which was so firmly fixed in his memory, that, on rising in the morning, he sat down and copied from his recollection both the music and the poetry.

Is it, then, to be thought a miracle—for what else is Divine Interposition in worldly affairs?—that the organs of thought of the brain should pursue to demonstration at night the problems (or objects) which occupied their attention during the day? and that the poet should make verses, the philosopher develop truths, and the musician compose sonatas? Should the poet discover truths, the philosopher compose sonatas, or the musician solve problems—well, then, some surprise might be expressed; but while these several parties continue to dream of, and to pursue at night, the things they are accustomed to occupy themselves with during the day, we shall continue to believe, with some exceptions already alluded to, that dreaming is but the extension of that activity of the cerebral organs, which is characteristic of wakefulness.

Here we find an example:—Coleridge says, that having retired in consequence of ill health to a lone farm-house on the borders of Somerset and Devon, he fell asleep one day when reading the following passage from PURCHAS'S PILGRIMAGE:—"Here the Khan Kubla commanded a palace to be built, and a stately garden thereunto; and thus ten miles of fertile ground were enclosed with a wall." He continued asleep for three hours, during which time

he composed two or three hundred lines, if, he says, "that can be called composition, in which all the images rose up before me as things, with a parallel production of the correspondent expressions, without any sensation or consciousness of effort." On awaking, he wrote down the lines as they stand in the fragment alluded to; but being interrupted in his task, the thread of his memory was broken; and the remainder of the poem disappeared from his mind.

In this case we do not find that the poet dreamed of agricultural implements, conchological specimens, anatomical preparations, fossil remains, or, in short, of any thing with which his intellectual faculties were not familiar; and this, with what we have said before, is, à priori, a fair argument in support of the opinion we venture to express.

Dr. Darwin alleges that he knew a gentleman who was deaf for thirty years, and that in his sleep he never dreamed of conversing with persons in any other way than with his fingers, or in writing, which were the usual modes of his holding converse with his fellow-men. Dr. Abercrombie, however, says that Mr. Bew, in the MANCHESTER MEMOIRS, (which we have not seen,) mentions the case of a blind gentleman, who dreamed of the figure, though he could not distinguish the varieties of the human face; and Smellie relates, that Dr. Blacklock, who lost his eyesight at an early period, had a distinct impression of a sense which he did not possess when awake. Dr. Blacklock described the impression by saying, that, when awake, there were three ways by which he could distinguish persons—by hearing them speak, by feeling their head and shoulders, and by attending to the sound and manner of their breathing. But in his dreams, he was

sensible of a vivid impression of objects, in a manner distinct from any of these modes. He supposed himself united to them by a kind of distant contact, which was effected by threads or strings passing from their bodies to his own.

We do not know if Mr. Bew's patient was born blind or not, but he might certainly dream of the figure of a human face, seeing he must have acquired a knowledge of its form, from his sense of touch, which we know, from frequent use in blind persons, is often exquisitely sensible; without supposing that there is any faculty in the brain for communicating ideas to the mind in sleep, independent of impressions or images conveyed through the medium of the senses. While the organs of vision, in Dr. Blacklock, having once been in activity, it is not at all extraordinary, that in favorable circumstances, they were recalled again into that condition, and the impression of objects recollected and renewed. But this is not the place to pursue this argument, and we are warned that we have already exceeded our limits; a very few remarks, therefore, will close this chapter, entreating our readers not to take our opinion upon trust, but to examine the question themselves. We quote, however, in support of what we have already advanced, what Dr. Elliotson writes on the subject.

He says, "Direction is given to dreams by the character of the exciting cause. Aristotle dreamed that a bull attacked him, but only struck his knee; on waking, a small boil was there. Dr. James Gregory, having applied a hot bottle to his feet on going to bed, dreamed that he was walking up Etna, and finding the ground insufferably hot.

One with a blister on his head, dreamed that he was being scalped by Indians. One in a damp bed, that he was being dragged through a stream. M. Giron de Buzareingues directed the character of his dreams at will; and Dr. Beattie mentions a man in whom any kind of dream could be induced, if his friends, by gently addressing him, afforded the subject-matter." The author just quoted informs us, as we have previously stated, that he has amused himself by speaking to persons muttering in their sleep and getting answers from them. Macnish relates the same fact of himself; and we have already seen that Smellie practised it.

We must now conclude this chapter, by remarking that we should extend it to an unwarrantable length, did we quote but even a very small portion of the cases we had marked for insertion. It is true, that the subject is one of far greater importance than would at first seem, (as it embraces the ontology not only of man but of all the animal kingdom, and is as yet involved in as much obscurity as in the darkest ages,) and should not be thus summarily dismissed; but as, in pursuance of the following hint, dropped by Dr. Abercrombie, we contemplate expatiating upon the subject more at length in a separate work, this abrupt termination need not be regretted. The Doctor, concluding his short chapter on Dreams in his masterly work on the INTELLECTUAL FACULTIES, thus expresses himself:—"The outline which has been given of dreaming may serve to shew that the subject is not only curious but important. It appears to be worthy of careful investigation; and there is much reason to believe that an extensive collection of authentic facts, carefully analysed,

would unfold principles of very great interest in reference to the philosophy of the mental powers." We hope, therefore, to supply the desideratum alluded to by Dr. Abercrombie.

CHAPTER X.

DEFINITION OF HALLUCINATION.—PRIDE OF FAMILY.—DUELLING.—LUST OF CONQUEST.—CÆSAR.—CHARLES XII.—SELF-LOVE.—MONOMANIACS, IF CURED OF ONE HALLUCINATION, ARE FREQUENTLY ATTACKED BY ANOTHER.—CASE OF MORBID SENSIBILITY.—ANECDOTE OF A CLERGYMAN.—CASES OF MONOMANIA:—OF A LADY.—OF THE SECOND DUCHESS OF ALBEMARLE, WHO BELIEVED SHE WAS MARRIED TO THE EMPEROR OF CHINA.—A FOOTMAN, WHO FANCIES HE IS THE DUKE OF WELLINGTON, AND THAT HE COMMANDED IN SPAIN, AND AT WATERLOO.—PAINFUL CASE OF A WIDOW, FROM DARWIN'S ZOONOMIA.—THE EXEMPLARY LADY RUSSEL.—EROTOMANIA.—CASES OF HACKMAN WHO SHOT MISS RAE, AND OF BLAKESLEY, WHO SHOT HIS WIFE.—NOSTALGIA.—CALENTURE.—CASE FROM LIND.—THE SCOTCH.—THE SWISS.—SUICIDE FROM HALLUCINATION.—SUICIDE OF THE YOUNGER BERTHOLLET.—DETERMINED SUICIDE OF A GENTLEMAN.—SUICIDE OF LORD S——.—CASE OF SUICIDE OF ONE OF THE AUTHOR'S FRIENDS.—ANOTHER CASE.—PAUPERTATIS TIMOR.—THE CELEBRATED KIRWAN.—A MISER WHO SOLD A MOUSE DURING A FAMINE FOR TWO HUNDRED PENCE, AND FAMISHED HIMSELF WITH THE MONEY IN HIS POCKET.—FEAR OF DEATH, AND ETERNAL PUNISHMENT.—SUICIDE IN A WEST INDIA REGIMENT.—ANECDOTE OF THE COLONEL.—DEATH GENERALLY PAINLESS.—THE GREAT EARL OF PETERBOROUGH.—HARMLESS HALLUCINATIONS.—DESIRE OF BEAUTY IN FEMALES PARDONABLE, WHEN NOT CARRIED TO EXTREMES.—TASSO'S HALLUCINATION.—HIS ATTENDANT SPIRIT.—BEAUMONT'S DECLARATION OF HIS BEING ATTENDED BY A GUARDIAN ANGEL.—AGRIPPA'S FOUR SPIRITS.—THE SEMINA OF PHRENOLOGY.—MR. PERCIVAL'S PAMPHLET.—BEAUMONT'S ACCOUNT OF THE SPIRITS HE SAW.—NICOLAI'S PHILOSOPHICAL EXPLANATION OF HIS HALLUCINATIONS.—A SPIRITUAL ESSENCE NOT NECESSARY TO ACCOUNT FOR HALLUCINATIONS.—HALLUCINATION THE REPOSE OR SLEEP OF THE ANTAGONIZING ORGANS OF THE BRAIN.

WHAT is strictly meant by the word HALLUCINATION, is a difficulty of feeling, or appreciating external relations

with which we are in connexion. Medical writers have therefore called it DYSÆSTHESIA, from the Greek, "to feel." In this sense, however, we do not propose to employ the word. Hallucination we shall consider as that condition of the brain, when one or more organs are actively excited without a corresponding activity in those which correct their inordinate action, as, for example, when an excess of self-approbation gives birth to inordinate vanity; or when the pride of family, the SUPERBIA STEMMATIS of Darwin, excites to absurd demand of homage from equals or inferiors; or when sensitiveness is carried so far, that a quarrelsome habit is established, and duelling, described by Sauvages as a disease, under the name of PUNCTUM HONORIS SALIENS, is the consequence, of which we have recently had a very remarkable instance; or again, when ambition becomes the ruling passion, and an insane love of conquest follows, rendering the mind insensible to emotions of pity, and the body superior to the vicissitudes of the seasons; in the one case opposing Cæsar, boasting that he had killed one million of his friends, and destroyed three millions of his enemies; and in the other presenting Charles the Twelfth of Sweden wrapped in his cloak, sleeping on the snow insensible of cold. Darwin and Good give some curious instances of excess of the passions, to which we have alluded. Among others, we find that of Narcissus recorded. Absorbed in the contemplation of his own image in the water, the unfortunate youth forgot the necessities of nature, and died from the want of sustenance; and another of a handsome young man of Darwin's acquaintance, who had been so much flattered by his parents, that his vanity trenched on insanity.

In some cases, where imaginations are mistaken for realities, "if cured of one source of insanity, they are liable, in a few months, to find another source, in some new, mistaken, or imaginary idea, and to act from this new idea." Here, too, we find that the patient is liable to conceal the cause of his desire, aversion, or uneasiness. Many conceal their love, others their hatred, as Iago, and others their diseases, as in the porter mentioned in our chapter on Prolonged Sleep. The following, from Dr. Darwin, is not an isolated case:—"Z. Z. called a young girl, one of his maid-servants, into the parlour, and, with cocked pistols in his hands, ordered her to strip naked; he then inspected her with some attention, and dismissed her untouched. Then he stripped two of his male servants in the same manner, to the great terror of the neighbourhood. After he was secured, he was persuaded to tell Dr. Darwin that he had got the itch, and had examined some of his servants to find out from whom he had received it; though at the same time there was not a spot to be seen on the hands, or other parts of the body."

Some hallucinations have a fatal termination. The following are examples:—A sensible and ingenious young lady thought she had seen an angel, and that he told her that she need not eat, though others were under the necessity of doing so. After many fruitless attempts to persuade her to take food, she died, having starved herself to death. A weak-minded man, a clergyman, drinking wine in company, swallowed a bit of a letter-seal; when one of his companions, seeing him alarmed, to increase his terror, jocularly cried out, "It will seal up your bowels!" From that instant he became melancholy, and in a day or two refused all nourishment. On being

pressed to give a reason for this refusal, he replied, he knew that nothing would go through him. He was, however, induced to take a cathartic, which operated freely; nevertheless, he could not be convinced but that his body was hermetically sealed, and with the exception of a little broth, which he was frightened into taking, he refused to swallow anything, and died in consequence.

The following cases were fortunately not immediately fatal:—A lady, about forty or fifty years of age, fancied she heard a voice say to her, "Repent, or you will be damned!" From that moment she became melancholy, and continued so for two years, but was at length cured:—A farmer's wife, going into her chamber, and finding the curtains of her bed drawn, undrew them, and fancied she saw the corpse of her sister, who was then ill at a distance, lying in it, and as her sister died about the same time, she could not be persuaded but that she had seen her, and became insane. In this state she remained two months, and then recovered:—An elegant, beautiful, and accomplished lady, twenty-two years of age, married about two months to a polished and affluent young man, it being a love-match on both sides, suddenly became melancholy, but contrived to conceal her hallucination so carefully that she did the honors of her table with grace and apparent ease. After much entreaty, she told her medical attendant, that she thought marrying her husband had made him unhappy, and that she could not efface this idea from her mind, night or day. By advice of this physician, she travelled, and finally recovered.

Other hallucinations are of a pleasurable kind. Donatus gives the case of a lady at Mantua, says Mason Good, who conceived she was married to a king, and would

kneel down, and affect to converse with him, as if he were present with his attendants; and if she found by chance a piece of glass in the street, she would hug it, as a jewel sent from her royal lord and husband.

He relates another case from Seneca, "of Senecio, a madman of considerable wealth, who thought himself and everything about him of great size; he had a great wife and great horses, and could not endure little things of any kind; so that he would be served with great pots to drink out of; a great hosen, and great shoes bigger than his feet. "Like her," says Burton, "in Trallian, that supposed she could shake all the world with her finger, and was afraid to clench her hand, lest she should crush the world to pieces, like an apple."

Edwards (BRITISH WEST INDIES) relates the following of the second Duchess of Albemarle. She accompanied the Duke her husband to Jamaica, and after his death returned to England immensely rich, and some years after fell into a state of mental imbecility, in the progress of which she pleased herself with the notion, that the Emperor of China, having heard of her immense riches, was coming to pay his addresses to her. She even made magnificent preparations for his reception. As she was perfectly gentle and good-humored in her lunacy, her attendants not only encouraged her in her folly, but contrived to turn it to good account, by persuading a needy peer (the first Duke of Montague) to personate his Chinese Majesty, and deceive her into wedlock, which he actually did; and with greater success than honesty, or, I should imagine, even the law would warrant, got possession by this means of her wealth, and then confined her as a lunatic. Cibber, the comedian, who thought it a

good jest, introduced the circumstance on the stage, and it forms a scene in his play called the SICK LADY CURED. Her Grace survived her husband, the pretended Emperor, for many years, and died in 1734, at the great age of ninety-eight. Her phrenzy, however, remained to the last, and she was served on her knee as Empress of China, to the day of her death.

A case somewhat analogous we find in Spurzheim. I saw, he says, in Dublin, a lunatic, who fancied himself the Duke of Wellington. He thought to have commanded in Spain, and to have gained the battle of Waterloo, yet at the same time he was a clever and excellent servant—did his service at table and in the house with great propriety. I saw him handing round at a table, where there was a large party, everything with perfect order and decency, so that no guest could suspect his aberration.

A young farmer in Warwickshire, finding his hedges broken, and the sticks carried away during a very frosty season, determined to watch for the thief. He concealed himself under a haystack, the weather being very cold, when an old woman approached, and began to pull up the hedge. He waited until she had tied up her bundle of sticks, and was carrying them away, when, springing from his concealment, he seized and threatened her with all the terrors of the law. After some struggling she freed herself from his grasp, and kneeling on the faggot, and in the bright moonshine stretching her withered arms to heaven, addressed him, already shivering with cold, in the following words:—"Heaven grant that thou never mayst know again the blessing to be warm!" He complained of cold all the next day, and wore an upper-coat, and in a few days another. In a fortnight he took to his bed,

saying nothing would make him warm, covered himself with very many blankets, and placed a sieve over his face; and from this single hallucination, for fear of the cold air, he kept his bed upwards of twenty years, when he died!

Before the present enlarged views of pathology were entertained, violent remedies were resorted to for the cure of such affections; circular swings, stripes, hard labour, and large doses of opium. Dr. Brandreth gave four hundred drops of laudanum to a maniacal patient at one dose, and our name-sake, Dr. Binns, on one occasion gave forty grains of crude opium, and twenty grains four hours afterwards, and it would seem with good effect!

This condition of the brain may, however, be altered, sometimes, by proper attention, even during the paroxysm. A young lady subject to cataleptic attacks, once remarked to Darwin during the fit, "My head is fallen off. See! it is rolled to that corner of the room, and the little black dog is nibbling the nose off." He immediately walked to the place, at which she looked, and returning, and assuring her that her nose was unhurt, she became pacified. Smollett gives a ludicrous account of this affection in RODERICK RANDOM; but the taste which directed the choice of disease as a subject of merriment, is questionable, if not vicious.

A case very similar to this happened to a friend of ours, while we were both at college. Five or six of us, returning from Dr. Hope's Lecture in the University of Edinburgh, having nothing to do, or, what is more likely, being idly inclined, repaired to our lodgings. In the next apartment was a gentleman, who was passionately fond of gymnastic exercises in every form, from single stick to

rope-climbing, for Professor Clias had then lately inoculated the youth of Great Britain with a desire to emulate his athletic feats, and from him, among other instruments for killing time, as foils and boxing-gloves, a pair of dumb-bells were procured. The friend to whom we have alluded, having used them violently for some minutes, suddenly exclaimed, "Oh! I have broken a blood-vessel," and laid them on the sofa, becoming ghastly pale, and declaring he had ruptured the left subclavian artery. A very trifling examination satisfied us that such was not the case; but we could not convince him to the contrary, and he lay on the sofa nearly speechless, or rather afraid to speak, lest speaking should produce instant death. All our attempts to rouse him being abortive, some one jocularly proposed to bury him, and deliver a funeral eulogium over the grave. This was no sooner proposed, than it was carried into effect. One powdered his head with flour, and put on a night-shirt for a cassock; another carried the dumb-bells on a pillow; a third his walking-stick; a fourth his hat and gloves; and as there were plenty of idlers in the "flat," the funeral procession was soon swollen to twelve or fifteen mourners. A copy of Sennertus' DE VULNERIBUS happening to lie open on the table, at the Section "De Vulneribus Capitis," a passage or two was read; the last words of each sentence being caught up, and repeated by all present. The various articles were then deposited in the supposed grave, and imaginary earth being thrown upon it, the funeral oration was delivered, in which, we blush to add, we played a conspicuous part. This ridiculous mummery at an end, we had hoped the ridicule thrown upon the whole matter would have dispossessed him of his hallucination;

but we were mistaken. Having a lecture to attend at one o'clock, we left the apartments, in company with the others, and did not return till three, when we found he had with difficulty removed himself to his own lodgings, which were in the same "land" or range of buildings with ours, but in the "flat" or story above. A message had been left, that we should attend him as soon as we returned, and we accordingly went up to his lodgings, and found him without his coat, linen, or flannel-waistcoat, standing before a large glass, examining with the most minute attention his chest and ribs. Beside him on the table was a copy of COOPER'S SURGICAL DICTIONARY, open at the article ANEURISM. One look sufficed to convey to our mind, that however we might have trifled with his feelings, his feelings were no trifle to him, and we became really seriously alarmed. He was deadly pale, and presented the appearance of a man labouring under some obscure disease of the heart, or mental aberration. He calmly drew our attention to the undoubted fact, that the left pectoral muscle, and indeed the whole upper left side of the body, were much larger than the right; did not complain of the mummery we had committed, or of the cruel sport we had made of his feelings; but begged that we would proceed immediately for the late Mr. Allan, then a very popular lecturer on Surgery. He said that he felt the artery give way, and heard the noise which it made as it snapped, and that he was convinced that nothing but an operation would save his life. Mr. Allan accordingly attended, and after a very minute and patient inspection, declared that no aneurism existed; but seeing the state of mind in which he was, ordered him to bed, and prescribed some aperient. It was evident, however,

to both of us, that Mr. Allan could not account for the increased size of the left pectoral muscle, and this fact, therefore, tended still further to excite our friend's suspicions, that Mr. Allan had concealed the real diagnosis; and accordingly Mr. Lizars, Dr. Allison, and lastly, we think, Mr. Liston, saw him; the latter eminent surgeon having some time before performed that grand operation for subclavian aneurism, which rendered him famous all over Europe, the living evidence of his skill being centred in the person of the man who drove his coach—a testimony of operative talent far more desirable than either academic or heraldic honours.—Mr. Liston pronounced the same opinion as the other professional gentlemen had done; and this in some measure reassured him, but it was at least three months before he recovered, and for months after he was in the habit of applying his right hand to his left side every few minutes. It was not till some time subsequent, and when the affair was nearly forgotten, that it occurred to us that the enlargement of the left pectoral muscle was caused by his being left handed, and that the crepitus which he no doubt heard, was the noise made by the head of the humerus slipping suddenly back, or forced abruptly into the glenoid cavity of the scapula, or probably, the lower slipping in the socket of the upper jaw, as we instinctively compress our teeth together, when we perform most exercises with the arms. This case, in consequence of the impression made on our friend's mind, might have terminated fatally, but for the confidence which he placed in Mr. Liston; but we are happy to say, he not only recovered, but enjoys a very extensive practice in Jamaica; and may he long continue to enjoy it!

Another case which occurred to us in practice some years after is instructive, as it shews how much good may be done with a little dexterity. A young married female of colour consulted us, complaining of severe and continued headache, insisting that she had worms in her brain, for the presence of which she accounted, by saying, that she had fallen asleep one day without covering her face with a muslin handkerchief, as is not unusual in the West Indies, to keep off the musquitoes, and that a fly had got up her nostrils, and deposited her eggs there. Never having at that time met a case of the kind, and, in fact, disbelieving the relation,—for the complaint had continued more than a year, which of course proved that the worms could not proceed from the ova of flies,—we tried at first to reason her out of the hallucination; but finding this ineffectual, our efforts were directed to the digestive organs, but with little improvement in the symptoms, though the treatment was pursued for two months. Tired of the case, we consulted an elderly practitioner, who at once declared it to be one of monomania, and devised the following plan:—Some small worms were procured from a ham, that had become decomposed, and put into a paper bag, which was concealed under the cuff. Having appointed the day for the operation, which we assured her was to relieve her of the worms, we stood behind her, and throwing her head back, her eyes being closed, passed a probe, first up one nostril, and then another, on the point of which was some camphorated ointment; then, bidding her hold her head over the handkerchief, which was spread in her lap, shook her head over it, at the same time allowing the worms to drop from the paper bag. The effect was electric; she lost her headache, and considered

the cure complete. Her general health, however, was never very good, and there can be no doubt there was disease of the brain present, as her features always presented a strange expression, as if in pain.

VIOLENT GRIEF is also a fruitful cause of hallucination. Darwin relates the following affecting instance:—A widow lady was left in narrow circumstances, with a boy and a girl, both beautiful children. As her circumstances only allowed her to keep one maid-servant, they occupied her sole attention. She fed them, dressed them, slept with them, and taught them herself; in fact, their education and culture were her only employment and consolation. By a remorseless disease they were both snatched from her in one week; so that she lost at once all that employed, and all that consoled her. For the first three or four days after their death, when any friend visited her, she sat upright with her eyes wide open, without shedding tears, and affected to speak of indifferent things; afterwards she wept much, and for some weeks talked of nothing but her dear children. Nor did she for many years, even to her dying hour, quite get over a gloom, which was left upon her countenance.

We have another touching example, in the instance of the exemplary Lady Russel. After the decapitation of her husband, she refused to see the light of day, shut herself up in her chamber, and literally cried herself blind. In these cases time seems to be the only panacea, by blunting the acuteness of bereavement.

EROTOMANIA, or SENTIMENTAL LOVE, very frequently degenerates into hallucination. Instances of this affection are so numerous and familiar, that we are excused the labour of compilation. "Men," says Darwin, "who

have not had leisure to cultivate their taste for visible objects, and who have not read the works of poets and romancers, are less liable to sentimental love; and, as ladies are educated rather with an idea of being chosen than of choosing, there are many men, and more women, who have not much of this insanity, and are, therefore, more easily induced to marry from convenience or interest, or from the flattery of one sex to the other." This may be true; but there is reason to believe that violent sentimental love is more common than is suspected, and that it may be conceived at a glance, as in the cases of Petrarch and Laura, Romeo and Juliet, and in their Eastern prototypes, Meijnoun and Leila. This kind of love often leads to tragical consequences, as in the instance of Othello; in Hackman, who shot Miss Rae, in the lobby of one of our theatres; or as in the late case of Blakesley, who shot his wife. The story of Emmet, and the melancholy fate of Curran's daughter, must not be forgotten; and who can, who has read THE BROKEN HEART of Washington Irving?

Another form of hallucination is that of NOSTALGIA, or a vehement desire to return to one's own country. The French call it MALADIE DE PAYS, and formerly, among our seamen, it was known by the name of CALENTURE, when frequently a whole ship's crew, one after the other, would become affected with it, and, if not prevented, would throw themselves into the sea, because they fancied that the waves were green fields. Dr. Lind says, that the crews of some vessels of war, which were sent ashore to cut wood at Lynch's Island, in Jamaica, were seized also with fever and delirium. This phrenzy attacked a man so suddenly, and with so much fury, that with his hatchet,

if not prevented, he would cut to pieces the persons who stood near him. (LONG'S JAMAICA.)

In the West Indies it frequently happened, during the prevalence of the impious slave-trade, that a gang of new negroes would be seized with it; in which case they would generally take to dirt-eating, a disease strongly resembling the CITTA of Darwin, and die one by one. It is said particularly to afflict the Scotch and Swiss, especially after listening to certain national airs. Thus, the beautiful and exquisitely plaintive air of "Lochaber" was not allowed at one time to be played by the band in India; and Zuinglius says, that the Swiss national air, the "Ranz de Vaches," was forbidden to be played in certain places, on pain of death. This affection is even found among animals; and horses will wander a long way back to the stables to which they have been accustomed; and dogs have been even known to cross the seas, to return to a beloved master.

Of that more fearful form of hallucination called SUICIDE, so many examples present themselves, that the selection becomes a work of difficulty and delicacy. Some recent instances must be still in the memory of our readers, especially that of the Earl of Munster, which seems to have been induced by a morbid fear of the treatment to which our countrywomen would be exposed, during their captivity among the Affghans. The late case of the girl Moyse, who leaped off the Monument, is said to have been traced to disappointed affection; and that of the stationer's boy, who followed her example, was the effect of the exaggerated sympathy of some portions of the public press for the unfortunate girl. In the case of the younger Berthollet, it may be traced to an in-

ordinate passion for scientific notoriety; in others, to a weariness of life, the effect of early dissipation, excessive indulgence, prodigious wealth, or organic defect. Darwin has recorded examples of suicide from most of these causes. We shall condense a few of them; referring the reader, who may be inquisitive upon the subject, for a more copious account to the recent work of Mr. Winslow ON SUICIDE.

A gentleman of polished manners, aged fifty, who destroyed himself a few months afterwards, said to Darwin one day—"A ride in the morning, and a warm parlour and a pack of cards in the afternoon, is all that life affords." He was persuaded to have an issue at the top of his head, as he complained of a dull pain there; but being unskilfully applied, it destroyed the pericranium to the size of an inch in diameter. During the period of re-integration, he was very indignant about it. He endured life, but soon after shot himself.—A gentleman was persuaded to dismiss a violent mistress, who was not only a termagant and a scold, but sometimes assaulted him. In two days he became melancholy, from the want of his usual stimulus, and on the third day cut his throat so completely that he died immediately.—Mr. Anson, the brother of the famous Lord Anson, related the following account of the death of Lord Sc——. His Lordship sent for him on the Monday preceding his death, and said, "You are the only friend I value in the world. I determined, therefore, to acquaint you that I am tired of the insipidity of life, and intend to-morrow to leave it." Mr. Anson, after a lengthened conversation, said to him, "I am obliged to leave town till Friday. As you profess a friendship for me, I entreat you do me this last favour

—Live till I return." Lord Sc—— thought this a pious artifice to gain time, but nevertheless promised to do so, provided he returned by four o'clock on that day. Mr. Anson, however, did not return till five o'clock, when he perceived, on going to the house, by the looks of the domestics, that the fatal tragedy had been already enacted. He went into the chamber of the deceased Lord, and found the corpse of his friend leaning over the arm of a great chair, with the pistol on the ground by him, the ball of which had been discharged into his mouth, and had passed through his brain.

We were acquainted with a gentleman studying medicine in Edinburgh. He was not particularly gifted with talents, but he was a polished and agreeable companion, and unfortunately for himself sung a good song, and was consequently frequently invited to dinner parties, at which the sacrifices to Bacchus were neither "few nor far between." Upon one occasion, remonstrating with him on the neglect of his studies, he replied, "I never intend to graduate. As soon as I spend all my fortune, I shall shoot myself." This he often repeated; sometimes, however, saying, "No, not shoot—I think prussic acid will do better." On returning from the West Indies after a long absence from Europe, and inquiring after this gentleman, we learned that he had thrown himself out of a window, and was killed. We know a similar case where a gentleman was remanded, and, as some of us thought, perhaps erroneously, unjustly. He declared he would take his degree, but would never survive his supposed disgrace. He did graduate; entered the army, was appointed assistant-surgeon, but hanged himself in the West

Indies. He was an amiable and estimable man, and his fate has always seemed to us cruel and inscrutable.

The fear of poverty, PAUPERTATIS TIMOR, is very properly considered as a disease. Dr. Darwin says it is a kind of avarice, which is likely to attack persons who have retired from active business; and as they are thus deprived of their usual employment, and are liable to observe too minutely the daily expenditure of money, without reflecting on the source whence it is derived, they become impressed with a lively dread of poverty, which in course of time degenerates into a morbid fear, that ends in avarice.

We know a gentleman at the present moment, who has accumulated a very large fortune in business, which is lucratively invested in the Funds, in India Stock, and in houses. He keeps also a large cash account at his bankers', yet he lives, or says he lives, in the daily dread of pauperism. Perhaps one of the most curious cases of avarice, says Good, is that related by Valerius Maximus of a miser, who took advantage of a famine to sell a mouse for two-hundred pence, and then famished himself with the money in his pocket! The son-in-law of the celebrated Kirwan informed us, that that philosopher also was not exempt from this frailty. He concealed a very large sum (twenty thousand pounds, we believe,) in his escritoire for many years, being haunted by the spectre of poverty, and suspicion of the insolvency of the British Banks. This hallucination is also liable to supervene sudden acquisition of fortune. Dr. Darwin records the case of a surgeon fifty years of age, of a parsimonious disposition, who having been left a large fortune by a distant relative, in a few

weeks went mad from the fear of poverty. He had seceded from a laborious country practice, and had lost the stimulus of examining the daily profits on his books; he also saw greater sums of money expended in his new and large house than he was accustomed to observe in his old and circumscribed establishment, and did not so distinctly perceive the source of supply. These considerations seem to have induced the mania of which he died.

Avarice is more likely to affect single men, says the same author, than those who have families, though an accumulation of wealth would seem to be more desirable to the latter; but an old man in the former situation has no personal connexions to induce him to open his purse; and having lost the friends of his youth, and not easily acquiring new ones, finds himself alone in the world; feels himself unprotected, as his strength declines, and is thus led to depend for assistance on money, and on that account wishes to accumulate it. Whereas the man of family has not only those connexions which demand the frequent expenditure of money, but feels a consolation in the friendship of his children, when age may render their good offices necessary to him. I have been well informed of a medical person in good circumstances in London, who always carries an account of his affairs, as debtor and creditor, in his pocket-book, and looks over it frequently in a day, when this disease returns upon him, and thus, by counteracting the maniacal hallucination, wisely prevents the increase of his insanity (ZOONOMIA).

THE FEAR OF DEATH, and the FEAR OF ETERNAL PUNISHMENT (ORCI TIMOR), are both common hallucinations, the latter very frequently causing suicide, particularly in those who are in the habit of attending

the rabid ululations of distempered preachers; and the former is common both to old and young. Many of the latter have been cured by being assured that death was not attended with any painful struggle. The former are frequently incurable, and sooner or later commit suicide; and, as they are generally the most harmless, simple, and perhaps virtuous of the preacher's congregation, it becomes a question if the relatives have not an action at law against them. We know of several instances of fear of eternal punishment in negroes, leading them to commit suicide; thus flying to the very evil they dreaded. The following anecdote may be useful:—Suicide from nostalgia becoming very general in a West India regiment (blacks) at Bermuda, the colonel adopted the following plan to put a stop to it:—The regiment was drawn up in square, and after speaking in general terms of the unsoldierly spirit of giving way to melancholy, and then committing suicide, he concluded thus: "If I have another suicide among you, I will commence with the drummer and flog every man in the regiment, and when every man has cut his throat, I will cut mine too, so that by —— I will have the pleasure of flogging you all again in h ——." It is said there were no more suicides after this awful threat.

The following cases Darwin recommends to be related to persons who are afraid of death. An elderly gentleman having sent for him one whole day before he could attend, said on his arrival he was glad to see him, as he was now quite well, though he had had a pain in his bowels the day before. He was then lying in bed with his legs cold to the knees, his hands and arms cold his pulse scarcely discernible, and he died in six hours

afterwards.—Another gentleman, about sixty, in a kind of stupor, in the act of dying, attended with difficult respiration like groaning, every ten or twelve minutes while the doctor sat by him, awoke, looked up, and said, "Who is it groans so? I am sure there is somebody dying in the room;" and in this mood sunk into a sleep—the sleep of death! We may add to these, that the celebrated Earl of Peterborough, though long complaining, and expected to die every hour by his medical attendants, was totally unconscious of it himself, and died at last in the act of giving orders for a long journey! So far as our experience goes, we have no hesitation in saying, that the act of death is unattended with any great pain. Not so, however, with the preceding symptoms and premonitory attacks, as in tetanus or hydrophobia, for example, where the pain must be horrible.

There are other and numerous hallucinations, which will occur to our readers; as one of their friends fancying himself a Braham, a Paganini, or a Kean, while not a few poets and wits are met with, in their own estimation. These are harmless; and, if we except the tedium of listening to them, or the impertinence with which they intrude themselves upon our time, may be tolerated, and even forgiven. It is doubtful, however, if we are justified in extending this lenity to a punster. Robbing a man of time, by perpetrating bad jokes, to which he is obliged to listen, is very like petty larceny; and, perhaps some such thought passed through Johnson's mind, when he said, a man that would make a pun would pick a pocket.

We had very nearly passed over, among the minor hallucinations, the most amiable and the most pardonable, viz. the DESIRE OF BEAUTY, (PULCHRITUDINIS

DESIDERIUM.) That the most beautiful of created beings should love and desire beauty, is not to be wondered at; and hence the loss of personal attractions, either by disease or age, as life advances, is acutely felt by all the sex. To repair or to prevent this loss, incomparable Macassars, wonder-working balms, rejuvenescing lotions, restorative washes, and extraordinary powders, have been invented, and have found anxious and credulous purchasers; but we have never yet heard that any one of these has converted a snub nose into a Grecian, a pair of thick lips into rose-leaves, or a yellow face into a fair complexion. Still the desire to please, by striving to appear what we wish them to be, all that is beautiful and fair, is not only pardonable, but commendable. And if the profession, whose duty it is, neglect to furnish them with the means to improve their looks, should we be surprised that ladies fly to quacks, who pretend, by a simple wash, to endow them with all the charms which Homer says reside in the girdle of Venus? This branch of the profession is sadly neglected. We pay large sums to improve the breed of our domestic animals, and yet we take no care, either by suitable marriages, or artificial means, to improve the growth and personal appearance of our children! But this is not the place to dwell upon this question.

When the desire of beauty is restrained within proper limits, it dignifies and exalts a woman, by rendering all those amiable traits, for which she is distinguished above man, more conspicuous and more delightful. To the harmony of nature, it adds the refinement of education; to the symmetry of features, the expression of repose; and to the saliency of wit, the reservation of judgment.

It improves where it does not adorn; chastens what it cannot soften; and conceals where it does not quite correct the parsimony of nature.

We regret we are not in possession of any secrets to enhance complexion, improve feature, or conceal defect, more than what is common to other members of our profession; or we should be too happy to disclose them. It may be useful, however, to know, that the tan of the skin occasioned by the sun may be removed by lemon juice, evaporated by the fire to half its original quantity, or by diluted—very diluted muriatic or chloric acid. The former clears the skin, by eroding the surface, but requires much caution in the application. The chloric acid must be largely diluted with water, and applied to the hands or face, and, "after a second of time, as soon as the tan disappears, the part must be washed with a wet towel and much warm water." (ZOONOMIA.) Freckles lie too deep for this lotion; but, according to Lady Wortley Montague, who blistered her face with balsam of Mecca, and thus removed them, epispastics may be useful. Indeed, Darwin recommends the face to be blistered, for the removal of these ugly spots. The cure should commence by blistering only a part of the face at a time, and so continuing until all has undergone the process. Three applications, one to each cheek, and another to the forehead, would probably be sufficient. In the West Indies, the brown females use the oil of the pericarp of the cashew nut (anacardium); and Dr. Brown says it generally succeeds, though it is a caustic remedy. We must apologize for this digression, at least to the critics. To our fair readers, is it necessary to offer in extenuation, any excuse?

Having thus treated of those hallucinations which depend upon the occasional or partial sleep of one or more of the cerebral organs, but which condition very frequently terminates in perfect paralysis, when the organ may be said to be chronically affected, we shall proceed to investigate that condition of the brain in which two or more organs are affected, as when a person thinks he sees, and at the same time converses with, imaginary beings. It is a complication of catalepsy, hallucination, and somnambulism, yet differing, as we shall shew, from all of them, not only in degree, but in the perfect consciousness which attends the advent of the crisis, and the recollection which the person afterwards possesses of what he supposed happened to him during its presence.

Of this form of hallucination, of all persons who have labored under it, none have been more celebrated, or more unfortunate, than the poet Tasso. He believed himself attended by a spirit, which watched over his actions, strengthened his virtuous resolutions, and restrained his vicious propensities. His friend Manso, being desirous of dissipating the cloud that hung over his intellects, remonstrated with him upon his infirmity, and endeavoured to wean him from his delusions; but in vain. The unhappy poet ever continued impressed with the idea that he was attended by a spirit; and upon one occasion, when Manso was present, he perceived Tasso suddenly fix his eyes on the window, and become immoveable. He called to him—shook him; but instead of replying to him, he exclaimed, "Behold the spirit that has been pleased to visit me! Look on him, and you will acknowledge the truth of what I say." Manso looked, but saw nothing. But in the mean time, Tasso continued to hold conversation with

the supposed spirit, though Manso could hear no voice but that of Tasso's. In the account which Manso gives of this strange scene, he says Tasso's replies were couched in such admirable language, and his subjects were so elevated, that he was ravished with admiration, and dared not interrupt him. At length he ceased speaking, and turning to Manso, said, "Are your doubts at last dissipated?" "On the contrary," replied Manso, "I am more confounded than ever. I have truly heard wonderful things; but you have not shewed me what you promised me." "You have seen and heard," replied Tasso, "more than"—— Here he checked himself; and Manso, who could not recover from his surprise, did not find himself disposed to press him further.

From what we have already said, and by comparing the case with those that have preceded it, the reader will not find it difficult to place Tasso's hallucination in its proper order.

We have a similar instance in Beaumont, the learned author of a TREATISE ON SPIRITS AND APPARITIONS. He reports the case of Tasso in his book, and gives this reason for recording it: "because, I think," he says, "it contains a sufficient answer to what many learned friends have said to myself on the like occasion." In his Dedication to Lord Carbury, he thus quaintly excuses himself for believing in, and writing on the subject of spirits and apparitions:—"The subject is abstruse, and treated of by few, and that sparingly. If I have more enlarged myself upon it, it is that some extraordinary visitations having happened to me, in which I have had a converse with those genii I treat of, have made so strong an impression on my mind, that I could not well withhold my-

self from perusing the best authors I could meet with relating to it, in order to draw an abstract of what I found most material in them, and to publish it, together with my own experience and thoughts in that kind, as I have here done."

Agrippa, however, was not content with a spirit or guardian angel, but allows every man three: one which is spiritual, another which is animal, and a third which looks over his professional pursuits. We fancy we can perceive in this doctrine something like the semina of a phrenological system; and were not the genii of Aristotle, Censorius, Ludovicus Vives, Apuleius, Porphyrius, Natalis Comes, Pythagoras, Plato, Ammianus Marcellinus, Cardan, Gilbertus Cognatus, Numa Pompilius, the Elder Scipio, and Apollonius Tyanæus, manifestations of the organs of benevolence, causality, self-esteem, language, love of approbation, etc.? What other system can account for the universal belief, that man is attended by a good and a bad angel, but that which admits a plurality of the cerebral organs? What else can account for lucky and unlucky days, the influence of the weather as affecting the power of writing or the flow of ideas, or the repugnance which we sometimes feel to employ our thoughts upon that which, at other times, affords the most exquisite gratification?

We shall make no apology here for quoting Beaumont's really eloquent passage, in reply to Naudæus, on the subject of the demon of Socrates, which, perhaps we may be excused in a popular work for adding, means simply a genius, or, as phrenologists would say, an inordinate development of a particular organ. "As for myself," says Beaumont, "I believe it may be

said, conformably enough to truth, that this familiar demon of Socrates, which was to him a foreseer in uncertain things, a pre-admonisher in doubtful, a guide in dangerous, was nought but the good rule of his life, the wise conduct of his actions, and the result of all his virtues, that formed in him this prudence; which may with justice be called the lustre and seasoning of all his actions, the eye that sees all, guides and orders all, and in a word, the art of life, as physic is the art of health. So that there is much more seeming ground to believe that the soul of this philosopher, purified from its violent passions, and enriched with all kinds of virtues, was the true demon of his conduct; than to imagine that he entangled himself with illusions and phantoms, gave credit to them, or followed their counsels."

That Beaumont, otherwise well-informed, shrewd, sensible, and learned, a man of no mean parts, given to study, of an amiable and philosophic cast of mind, labored under hallucinations of the most fearful kind, which he believed to be veritable spirits, the following extract from his own work will prove. It will be observed, however, that there is no servile cringing or superstitious fear displayed in the narrative; but a plain statement of facts, detailed without pomp, sustained without exaggeration, and recorded without mystery. We have a similar case in that of Mr. Percival, who has recently published a pamphlet detailing the hallucinations under which he labored, and for which he was confined in an asylum for a long period. Like Nicolai, he has taken a philosophic view of the subject, whereas Beaumont adopted the scholastic or superstitious doctrine of his day. Beaumont, after referring to the second and fifth answers to queries printed

in AUBREY'S MISCELLANIES, thus continues:—"I saw hundreds of spirits, though I never saw any in the night-time, without a fire or candle-light, or in the moonshine; and as the spirit mentioned in that particular paragraph (Aubrey's) had two particular spirits, there named, which instantly attended him, besides others without names; so it was with myself—two spirits constantly attending me night and day, for above three months together, who called each other by their names; and several spirits who called at my chamber-door, and asked whether such spirits lived there,—calling them by their names; and they would answer they did. As for the other spirits that attended me, I heard none of their names mentioned, only I asked one spirit, which came for some nights together, and rung a little bell in my ear, what his name was, who answered Ariel. * * * The two that constantly attended myself appeared both in women's habit, they being of a brown complexion, and about three foot in stature; they had both black, loose network gowns, tied with a black sash about the middle, and within the network appeared a gown of a golden colour, with somewhat of a light striking through it. * * * I have been sitting by the fire with others (when) I have seen several spirits, and pointed to the places where they were, telling the company they were there. And one spirit whom I heard calling to me as he stood behind me, on a sudden clapped his finger to my side, which I sensibly perceived, and started at it; and as I saw one spirit come in at the door, which I did not like, I suddenly laid hold of a pair of tongs and struck at him with all my force, whereupon he vanished. * * *
I must declare I would not for the whole world undergo what I have undergone upon spirits coming twice to me;

their first coming was most dreadful to me, the thing being then altogether new, and consequently more surprising; though at the first coming they did not appear to me, but only called to me at my chamber windows, rung bells, sung to me, and played on music, etc., but the last coming also carried terror enough; for when they came, being only five in number, the two women before mentioned, and three men (though afterwards there came hundreds), they told me they would kill me, if I told any person in the house of their being there, which put me in some consternation, and I made a servant sit up with me four nights in my chamber before a fire, it being in the Christmas holidays, telling no person of their being there. One of these spirits, in woman's dress, lay down upon my bed by me every night; and told me, if I slept, the spirits would kill me, which kept me waking for three nights. In the meanwhile, a near relation of mine went (unknown to me) to a physician of my acquaintance, desiring him to prescribe me something for sleeping; which he did, and a sleeping potion was brought me, but I set it by, being very desirous, and inclined enough to sleep without it. The fourth night I could hardly forbear sleeping; but the spirit lying on the bed by me, told me again I should be killed if I slept; whereupon I rose, and sat by the fire-side, and in a while returned to my bed; and so I did a third time, but was still threatened as before: whereupon I grew impatient, and asked the spirits what they would have? I told them, I had done the part of a Christian, in humbling myself to God, and feared them not, and rose from my bed, took a cane, and knocked at the ceiling of my chamber, a near relation of mine lying then over me, who presently rose, and came down to me, about two of

the clock in the morning; to whom I said, You have seen me disturbed these four days past, and that I have not slept; the occasion of it was, that five spirits, which are now in my room with me, have threatened to kill me, if I told any person of their being here, or if I slept; but I am not able to forbear sleeping longer, and acquaint you with it, and now stand in defiance of them; and thus I darted myself about them; and notwithstanding their continual threats, I slept very well the next night, and continued so to do, though they continued with me above three months, day and night."

What Beaumont, according to the philosophy of his time, attributed to spirits, Nicolai proved indisputably, in his own person, were but the creatures of imagination, or, in other words, were the consequences of that diseased or over-excited condition of the cerebral organs, to which we have so frequently alluded. The phenomena are analogous; the explanations only differ. Nicolai informs us, that in the year 1791 he was much affected mentally by several incidents of a very disagreeable nature; and his wife and another person, coming to console him in this violent perturbation of his feelings, he observed a figure about ten paces from him. The figure was that of a deceased person. "I pointed at it, and asked my wife whether she did not see it? She saw nothing; but being much alarmed, endeavoured to compose me, and sent for the physician. The figure remained some seven or eight minutes, and at length I became a little more calm; and as I was extremely exhausted, I soon afterwards fell into a kind of troubled slumber, which lasted for half an hour. * * * In the afternoon, a little after four o'clock, the figure which I had seen in the morning again

appeared. I was alone when this happened—a circumstance which, as may be easily conceived, could not be very agreeable. I went, therefore, to the apartment of my wife, to whom I related it. But thither also the figure pursued me. Sometimes it was present, sometimes it vanished, but it was always the same standing figure. A little after six o'clock, several stalking figures also appeared; but they had no connexion with the standing figure. * * * After I had recovered from the first impression of terror, I never felt myself particularly agitated by these apparitions, as I considered them to be what they really were, the extraordinary consequences of indisposition; on the contrary, I endeavoured as much as possible to preserve my composure of mind, that I might remain distinctly conscious of what passed within me. I observed these phantoms with great accuracy, and very often reflected on my previous thoughts, with a view to discover some law in the association of ideas by which exactly these or other figures might present themselves to the imagination. Sometimes I thought I had made a discovery, especially in the latter period of my visions; but, on the whole, I could trace no connexion which the various figures that thus appeared and disappeared, had either with my state of mind, or with my employment, and the other thoughts which engaged my attention. After frequent accurate observations on the subject, having fairly proved and maturely considered it, I could form no other conclusion on the cause and consequence of such apparitions, than that, when the nervous system is weak, and at the same time too much excited, or rather deranged, similar figures may appear in such a manner as if they were actually seen and heard; for these

visions, in my case, were not the consequence of any known law of reason, of the imagination, or of the otherwise usual association of ideas; and such also is the case with other men, as far as we can reason from the few examples we know."

In the LONDON MAGAZINE, for the year 1765, in which the dream of Mr. Wilkins, given in our chapter on Dreams, was first inserted, we find the following corollary upon it. It is written by a Dr. J. Cook, who, like Beaumont, laboured under disease, which he mistook for spiritual agency. He writes—"Ever since I was three-and-twenty years of age, I have had an invisible being or beings attend me at times, both at home and abroad, that has, by some gentle token or another, given me warning and notice, that shortly I should certainly lose a particular friend or patient. It began and continued from our marriage to the death of my first wife, in May, 1728, and her infant daughter. After that they came seldom, but so gentle, civil, and familiar, that I chose rather to have them about my house than not, and would not, if I was to sell it, part with the same without some extraordinary consideration, upon that very account; and I really hope they will never leave me as long as I live, though my spouse wishes otherwise, to whom they are not so agreeable."

Dr. Hibbert (PHILOSOPHY OF APPARITIONS) has treated this writer with a spirit of uncandid criticism, which we regret to see in an author otherwise dispassionate and impartial. When the Doctor applies such language as "superstitious fears and vulgar prejudices," to a simple narrative of the symptoms of a very common cerebral disorder, namely, hallucination, he seems to have

forgotten not only the etiology, but the symptomatology of disease. Poor Cook was to be pitied, not laughed and sneered at, as if he were both an idiot and an impostor. The whole secret of the case lay in his suffering from disease, without being aware of it.

We have barely space to refer to Cellini's account of the devils he saw, with the Sicilian necromancer, which Mr. Roscoe imagines were produced by a magic lantern, and therefore briefly relate what happened to ourself when, between seven and nine years of age, we were recovering from the hooping-cough or measles, but which we cannot at this distance of time recollect. The vision or ecstasy occurred in Jamaica, while the author lay on his back, on a sofa, looking upwards at the ceiling; and that he was awake he has no doubt, since he distinctly remembers, that the pigeons flying backwards and forwards in the yard, often distracted his attention, and consequently interrupted the succession of figures. In this state, his mind became intently fixed on a number of little men and women, that he imagined he could distinctly see walking on the roof of his mouth. One figure was most remarkable. He was dressed in a dark coat, pantaloons, and hessian boots, and wore a black glazed hat. The appearance of these images afforded great pleasure, and hence the interruption caused by the flying of the pigeons became so intently fixed in memory. The author does not remember how long the vision or ecstasy lasted, or was at length broken; but he well recollects frequently endeavouring to recall it, but could never succeed.

It is easy in this case to account for the dress of the figure described. The grooms, or waiting-boys as they

are called in Jamaica, at that period generally wore black glazed hats, but not pantaloons and hessians; but then pantaloons and hessians were worn by many white persons; and hence the incongruity of the dress. The complexion of the figures were not black, however, but white, which, considering the country in which the author was born, and the persons by whom he was surrounded, (all blacks but the family,) seems surprising. The author is not aware, however strange it may seem, of ever having attempted any explanation of this hallucination, until writing this book; thus shewing how frequently it happens, that events and occurrences of interest and importance, are hourly happening to and around us, but of which we take no special notice, unless our attention is directed to them by some collateral or even opposite cause. Our hallucination lasted but for a short time, and never returned, whereas, the "demon" of Socrates was permanent—the activity of certain organs of his brain, during the repose of the others, being seldom or never interrupted.

We have already seen that Franklin believed he was assisted in his undertakings by visions in his dreams, and that Cardan boasted of the familiar which attended him and watched over all his actions. Aristotle, Plotinus, Porphyrius, Iamblicus, Chicus, Tasso, Cellini, and Scaliger, also had hallucinations, and entertained the belief that they were protected, and excited to action by attendant spirits. In PLATO'S THEAGE, Socrates is even made to say, "By some divine lot I have a certain demon which has followed me from my childhood as an oracle," and subsequently he intimates that he gained all his knowledge from the instruction of the demon. Change the word "demon" into "dream," and we have the hallucination of Franklin.

Napoleon believed in a certain "star," or fate, as have all great generals and successful warriors; and Cromwell had his lucky and unlucky days, and Brutus his genius. Is not this belief, then, so common among distinguished men, the undue exaltation, or ecstasy of particular organs during the repose, or at the expense of the other portions of the brain? Is it not hallucination, catalepsy, somnambulism, or mesmerism, presenting itself under a less perfect development? Dr. Hibbert (PHILOSOPHY OF APPARITIONS) very properly considers the delusions of Nicolai the bookseller as the effects of disease, or physical causes—or, to speak more technically, to the undue action of certain organs of the brain. But Glanvil (SADDUCISMUS TRIUMPHATUS) refers all such phenomena to the agency of spirits; thus inventing a spiritual cause where there was no necessity, and substituting that which is obscure and not demonstrable, for that which is self-evident and demonstrable. We are not surprised, however, at his philosophy, when we consider the very little progress which had been made, from the time of Aristotle and Hippocrates, in physics and pathology, to the period when he published his work. A very slight reference will afford some idea of this school of philosophy. For example: He gives a curious relation of a gentleman's butler, who was subject to undue excitation of individual organs of the brain, or to delusions of a character analogous to those of Nicolai, but without Nicolai's coherence or consistence. He is sent by his master for a pack of cards—on passing a field he sees a number of people sitting round a table enjoying good cheer—he is invited to partake of it, when one whispers, "Do nothing this company invites you to do." He refuses; the vision of food vanishes—and, lo!—the

company are dancing and singing. He is invited to join in the dance, but again refuses, when the company "fall to work;" and a third time they solicit his cooperation, but a third time he refuses, when the whole dramatis personæ disappear, and the poor wretch, terrified and alarmed, flies to his master's house, where, as the reader has anticipated, he fell senseless, or was attacked by epilepsy. On the following night, he sees a figure at his bedside, which tells him that if he offers to stir out of doors the next day he will be carried away. However, towards evening, having occasion to pass the threshold; he no sooner steps out, than he perceives a rope which is cast about his middle, and he is dragged forcibly onwards, and is only stopped by a horseman, who "lays hold of one end of the rope," and immediately has a smart blow given him on the arm, "by which means the man was stopped."

In this relation we see the love of the marvellous developing itself. Here is plainly a case of monomania, but it would not do for the ethereal philosophers, and consequently we have the agency of spirits, a rope, and "a smart blow"—thus shewing the unsatisfactory nature of the theory of an incorporeal agency to the propounders themselves, since, if their spirits could do all that Glanvil supposes they can, where was the necessity for calling in the physical aid of a rope? To proceed—this strange story reaches the ears of Lord Orrery, and that nobleman has the man sent to his house, where he is placed in a room attended by many persons, among whom was the famous Greatrix, the mesmeriser, or, as he was designated, "the Stroaker," to prevent him from being carried away that day, as the spectre had again informed him, in his sleep. There were also two bishops, and "other persons

of quality in the house;" and the former were consulted as to the propriety of administering a certain remedy, which the spectre had recommended for him; and they determined in the negative. It seems that the poor creature was free from his complaint till the afternoon, when he was seized by a "crisis," and two men could not hold him down. There is nothing wonderful in this; but when we are informed that he was taken away forcibly from them, and "carried into the air to and fro over their heads," pity for superstition, gives place to indignation, at the deception attempted to be passed upon us, and we can no longer follow the case with any patience. Glanvil, however, was one of those bullet-headed men, who once having advocated a theory, are never at rest till they have ransacked heaven and earth to support it; thus evincing, by their great solicitude for authority, the weakness of the data on which their system is founded. The authority of Newton or of Laplace will go far to strengthen and fortify a speculative position; but neither the opinion of Newton, nor the ipse dixit of Laplace, can be opposed to truth. Glanvil was of a different opinion; and though many told him that he mistook disease for supernatural agency, very learnedly and piously, in his Second Part of the SADDUCISMUS TRIUMPHATUS Sect. vi., entitled PROOFS FROM POSSESSIONS OF EVIL SPIRITS, AND THAT THEY WERE NOT DISEASES, AS THE WITCH-ADVOCATES WOULD HAVE THEM, settles the question to his own satisfaction, if not to his adversaries.

Dr. More, in his edition, follows in the same strain, but in place of "witch advocate" substitutes the word "psychopyrist" or materialist, a preferable expression, as it conveys the meaning intended.

We intended to give some of the arguments and reasonings of Webster, on the subject of visions and spectral apparitions, as they evince a strong mind, and a spirit of philosophic truth highly honorable for the period in which he wrote, and in a great measure strengthen the opinion which we have entertained, but that we find it impossible, from the length to which this chapter has already been extended. From what we have said, however, from the facts which we have collected, the examples which we have given, and the conclusions at which we have arrived, it would seem that, with certain reservations, the true explanation of visions, apparitions, ecstasies, dreams and hallucinations, is to be found in the inordinate action of certain cerebral organs, during the repose or sleep of their opposite or antagonizing organs; or, in a word, is a veritable sleep of judgment, comparison, and appreciation, while imagination, invention, and combination, are unrestrained, active, and intensely re-excited.

CHAPTER XI.

FAINTING.—ASPHYXIA.—SYNCOPE.—MODES OF DEATH.—HOW DIVIDED.—DEATH BEGINNING AT THE LUNGS.—AT THE BRAIN.—AT THE HEART.—SIMULTANEOUS DESTRUCTION OF ANIMALISM, AND ORGANISM.—SUFFOCATION.—DEATH PRODUCED BY VENOUS BLOOD ACTING ON THE NERVOUS SYSTEM AND MUSCULAR FIBRES OF THE HEART.—ACTION OF GASES ON THE HUMAN BODY.—SUICIDE OF THE YOUNGER BERTHOLLET.—SIR HUMPHRY DAVY'S NARROW ESCAPE FROM ITS EFFECTS.—EXHALATIONS IN BURYING-GROUNDS.—DARING AND FATAL EXPERIMENT OF A YOUNG CHEMIST.—DEATH FROM DROWNING.—DR. GOODWYN'S EXPERIMENTS.—DEATH FROM DROWNING NOT PAINFUL.—LENGTH OF TIME A PERSON MAY BE UNDER WATER.—DR. DAVY'S STATEMENT.—TISSOT'S CASES.—DIVERSITY OF OPINION RECONCILED.—INDIAN, ASTRACAN, DUTCH, AND INDIAN DIVERS.—JOHN BARRINUS COULD REMAIN UNDER WATER SIX HOURS.—RECOVERY AFTER ONE QUARTER OF AN HOUR'S IMMERSION.—DEATH FROM STRANGULATION OR HANGING.—DR. MONRO'S EXPERIMENTS ON DOGS.—PARTIAL OBSTRUCTION OF THE TRACHEA DOES NOT CAUSE INSTANT DEATH.—CASE OF RESTORATION AFTER TWENTY-NINE MINUTES' HANGING—AFTER A WHOLE NIGHT.—PERSONS SAVED FROM THE PUNISHMENT OF HANGING BY A CANULA.—REMARKABLE CASE OF GORDON, THE HIGHWAYMAN.—DR. DODD.—FONTLEROY.—A GIRL EXECUTED AND RESUSCITATED.—THE STILL MORE REMARKABLE CASE OF ANNE GREEN.—A PARISIAN EXECUTION.—DEATH BY COMA.—DEATH BY SYNCOPE.—SUDDEN DEATH FROM THE UPAS ANTIAR, TOBACCO, AND ADMISSION OF AIR INTO THE VEINS.—DEATH FROM SIMULTANEOUS CESSATION OF ANIMAL AND ORGANIC LIFE.—PHENOMENA OF DEATH COMPLICATED.—EXPERIMENTS OF DR. PAYERNE AT THE POLYTECHNIC INSTITUTION OF LONDON.

As that temporary, or sometimes prolonged, or often fatal interruption to the phenomena of life, called

FAINTING,—a condition of the body which may be induced by terror, exposure to mephitic gases, hæmorrhage, suffocation, suspension or strangulation, and called by medical writers SYNCOPE, or ASPHYXIA, literally signifying want of pulse—cannot be classed among bodily diseases, and as it is analogous to trance, and, in fact, differs from that affection only in degree, it will require a short notice at our hands.

Bichat was the first who treated it as a scientific question, and thus drew the attention of medical writers to its pathological etiology. It is true that that great principle in physiology, that the mutual relations between the heart, the lungs, and the brain, gave result to those phenomena of the body called in common language Life, but which have been divided by physiological writers into Organic and Animal Life, was partially known, or at least suspected before his time; but to him is due the merit of putting the question appositely, and consequently, of attracting that regard which it had not previously received.

It must be premised, before we proceed, that the heart and arteries, the veins and all the vessels of the body, constitute Organic, or Vital Life ; while the brain and nervous system compose Animal, or Sentient * Life. The link that connects these two great principles of being is RESPIRATION, which is performed (with the aid of the great muscle called the diaphragm, and the

* It would be more convenient if organic life was called ORGANISM, and animal life, ANIMALISM. The repetition of the word life, and not employed, by the way, in a strictly physiological sense, is apt to confuse, while it does not convey any definite result of phenomena. We shall therefore substitute the words we have suggested.

muscles at the sides, chest, and abdomen) by the LUNGS, organs, which Baglivi, and after him Mr. Mayo, very justly compares to a pair of bellows, of which the trachea (or windpipe) is the nozzle. It is here, as we have already shewn, that the blood is arterialized, or decarbonized, and rendered fit for the purposes for which it is required by the body.

This short description will assist us in our endeavors to define the nature of asphyxia, which, as occurring so often in the daily accidents incidental to a vast manufacturing and commercial population like that of England, from exposure in gas-works, violent concussions on railroads, or submersion in water, either in the seas which lave the line of our extended coast, or in the numerous rivers and canals which intersect and irrigate the land, is one of general interest and vast importance. A knowledge of the true nature of asphyxia, and consequently of the means which *ought* to be employed, is at all times useful, and may not unfrequently save the life of a casual acquaintance, a beloved friend, or an affectionate child. We therefore treat this portion of our inquiry somewhat more professionally than we have done other parts of our very interesting subject.

Medical writers divide all deaths, however produced, whether from violence, mephitic gas, poisons, disease, submersion, cold, hæmorrhage, lightning, suspension or decapitation, into four kinds.

The first kind of death is that beginning at the lungs; the second is that beginning at the brain; the third is that beginning at the heart; and the fourth is the simultaneous destruction of ANIMALISM and ORGANISM. The two first, Dr. George Gregory thinks may be considered

modifications of each other, and as they are the most usual modes by which death is effected, whether suddenly, or in the progress of disease, they will merit a priority of discussion.*

In death by suffocation, or strangulation,† the heart continues to beat after respiration has ceased; and, consequently, the left ventricle propels venous blood, or blood which, not being arterialized, is unfit for the purposes of life, to all parts of the body; and when a very few waves of this improper blood have circulated through the brain, insensibility takes place, and animal life ceases. But this venous blood, having destroyed animalism, or for ever interrupted the phenomena of the nervous system, does not stop here; but penetrating into the interstices, or fibres of the heart itself, by means of the coronary arteries which supply that organ with blood, gradually destroys it, and with it organism, or organic life. This, then, is complete death; and, perhaps, there never will be any means devised to alter or restore the lost powers of the system under this condition. In this case, which is one of pure asphyxia, death is to be attributed to the venous blood acting as a poison—first on the nervous, and secondly, on the muscular fibres of the heart. Here animalism, the existence of which is necessary to pain, or suffering (for we cannot feel without the nerves and

* Elements of the Theory and Practice of Medicine, by George Gregory, M.D. etc. 1839.

† Suffocation is produced by stopping the mouth, "burking," or when any foreign body is lodged in the windpipe, or from mephitic gases; strangulation, by ligature, as a rope, or by simple pressure with the hands.

brain), ceases before organism, and doubtless "this is a benevolent provision of nature." *

That this is a correct view of the manner in which death is produced, by suffocation, hanging, or exposure to nitrogen gas, is rendered probable by experiments made upon animals. If animals are killed by any of these methods, and, their bodies examined, the heart is found contracting after the diaphragm has ceased to act. The skin is discolored; and venous, or inappropriate, and therefore poisonous blood, is seen in the great arteries, and in the left or animal side of the heart; while the

* Dr. Roget dissents from this theory. He says, "If we were to admit this doctrine, there would present itself this obvious difficulty in accounting for the renewal of the contractions of that organ (the heart) on the re-establishment of respiration; namely, that the very power, to which it must owe the restoration of its irritability, by the propulsion of fresh arterial blood through its vessels, has, on this hypothesis, been itself destroyed, and therefore the means of recovering it do not exist. Resuscitation from asphyxia would, if this were true, be impossible; but, since daily experience shews us that the heart may be made to renew its contractions, even some time after they have ceased, we are forced to conclude that that organ still retains, under these circumstances, a considerable share of irritability, ready to be called into action when a proper stimulus is applied. On the renewal of the action of the pulmonary capillaries, by which means a fresh supply of arterial blood is poured into the left auricle and ventricle, these cavities are urged by their appropriate stimulus, which is that of mechanical distension, again to contract and renew the circulation. Arterial blood being thus again diffused over the system, imparts its vivifying influence to all the organs; their suspended functions are resumed, and animation is restored." We differ with much reluctance from Dr. Roget, for we think it doubtful that the action of the heart has ever been restored after its parietes have been saturated with carbonized blood.

large veins on the right or organic side are always full of blood. This principle in pathology, namely, the manner in which death is accounted for here, admits of a further illustration. Dr. Gregory says, from what happens in a few cases of drowning, but more frequently after exposure to carbonic acid gas, as when a brewer's man, going into an empty vat from which beer has been recently drawn, instantly falls down insensible, the action of the heart in such cases is often renewed, but insensibility continues, and the patient, after remaining in a perfectly apoplectic state, for a few hours, dies. In some instances, these symptoms subside, and the patient recovers. It is therefore presumable, that in such cases the quantity of venous blood which had circulated through the brain, had been quite sufficient to injure it seriously, though not totally to destroy its functions. This kind of death takes place also not only in hanging and drowning, but even if the nostrils and mouth be closed, or if an animal be confined in vacuo, or in an irrespirable gas, as nitrogen, or if the spinal cord be divided at the upper part of the neck; for, by this latter operation, the muscles of respiration are paralyzed, and arterialization of the blood prevented.

An instance of death nearly taking place from closing the mouth and nostrils, is given by Dr. Roget. An athletic black, of pugilistic celebrity, had been selected, from the fine form of his chest, and the well-marked expression of his muscles, as an academic model. It was wished to obtain a cast of his body; but this being attempted at one operation, and in one entire piece, as soon as the plaster began to set, he felt on a sudden deprived of the power of respiration, and, to add to his misfortune, was cut off from the means of expressing his

distress. His situation, however, was fortunately perceived, just in time to save his life, by breaking his bonds, and releasing him from the extreme peril in which the academicians had placed him.

All gases do not act in this manner on the body; but in some, their action is modified by circumstance, and by the age of the persons exposed to them; for example, Dr. Babington has recorded two cases of death by suffocation from exposure to carbonic acid gas, by which it would seem that this gas is more obnoxious to youth than to age. Two persons—one a man of thirty-eight years of age, the other a boy of thirteen—went to bed in a room in which was a chafing-dish, filled with burning charcoal. In the morning the boy was found completely dead, but the man was in an apoplectic state, and remedial means having been adopted, he recovered. (MEDICO-CHIRURG. TRANS. vol. ii. p. 83.) Bourdon relates a similar case. A woman, urged by jealousy and misfortune, determined to destroy herself. With this view, she shut herself up in a closet with a large brazier of burning charcoal. Some time after the bodies were discovered. The child was perfectly dead, but the woman was recovered without much difficulty. (PRINCIPES DE PHYSIOLOGIE MEDICALE, Partie ii. p. 650.)

We are indebted for a very minute account of the symptoms which attend exposure to the fumes of charcoal, to the monomania of the younger Berthollet, son of the celebrated chemist of that name. Determined to commit suicide, he chose death by carbonic acid gas; and carefully closing every aperture, shut himself up in a closet, with a chafing-dish of burning charcoal. He then sat down, and noted his feelings. They were con-

fusion, head-ache, vertigo, nausea, heaviness, and irresistible inclination to sleep; in short, the symptoms were those attending the exhibition of a narcotic. His remarks were evidently interrupted by a pause; then follows an illegible word, and the pen dropped from his hand!

The gas, or steam of burning coal, is likewise slow in its action on the living body, and persons frequently recover who have been exposed to it. Mr. Tossach, of Alloa in Scotland, relates the case of a man asphyxied from the steam of burning coal, who was recovered by artificial respiration, venesection, friction, and "tossing about." Dr. Frewen, of Sussex, mentions, that a man, having been stupefied by the smoke of sea-coal, was recovered by plunging him into cold water, and afterwards laying him in a warm bed. This also is the plan pursued to recover the dogs which for the gratification of idle curiosity are experimented upon by their cruel owners in the grotto Del Cane. When taken out insensible, they are plunged into water, well dried, and then warmed by artificial means.

Sir Humphry Davy, in his elaborate experiments on the gases, among others made an attempt to test the noxious quality of carburetted hydrogen, by swallowing a measure of it in its pure, or undiluted state, and was very nearly falling a victim to his love of science. He only took three inspirations, and they nearly killed him. (RESEARCHES CONCERNING NITROUS OXIDE, p. 468.)

Asphyxia, however, which takes place from exposure to gases of a more compound nature, as carburetted hydrogen, or common gas, and that which arises from cemeteries and sewers, is, generally, instantly more fatal.

Fourcroy, on the authority of the report made by

the grave-diggers in France, who were examined on the noxious effects arising from exhalations in burial-grounds, mentions, that those men who happen to be standing near a corpse, when the abdomen is struck by a pick-axe, often fall down on a sudden, in a state of apparent death, while those at a little distance are attacked with sickness, giddiness, tremors, and fainting, which symptoms continue several hours. We have a very striking corroboration of these facts in that valuable work of Mr. Walker's, GATHERINGS IN GRAVE-YARDS, a book that should be in the hands of every inhabitant of a large city. The cases there cited are so numerous, and the arguments employed against the dangerous practice of interment in cities so conclusive, that we are convinced that the work has only to be more generally known, to cause the principle of transurban interment to be carried out in all the cities of Europe.

We would have willingly closed our remarks on the subject of death from exposure to noxious gases here, did we not think, that the mention of a daring but most fatal experiment may prove not altogether a fruitless warning to young chemists. We record the circumstances with pain, for we cannot recollect but with sorrow that, independent of the destruction of the person on whom the experiment was made, the adventurous chemist himself sunk from its consequence into melancholy and dejection; fled to opium for relief; and alternating the spirituous tincture with the drug itself, desecrated the fount of reason, and died raving mad!

A young and ardent student, a native of Jamaica, who had just commenced the study of chemistry, unfortunately reading in a chemical work that chlorine gas, or, as it was

then called, the hyper-oxymuriate, possessed the power of bleaching things exposed to its action, immediately conceived the idea of turning a negro white. From the moment this idea presented itself to his mind, he could think of nothing else. In vain he tried to read, to eat, to sleep; this absorbing thought refused place to any other image in his mind; this grand experiment haunted him, morning, noon, and night, and allowed neither rest nor quiet. Notwithstanding his ardour, however, he was compelled to wait some time before he could gratify this importunate desire; for the ingredients were not to be procured in that part of the country in which he resided, and he was therefore compelled to send to Kingston for them. At length the long-coveted treasure, the black oxide of manganese, reached him, and he forthwith prepared for his grand experiment. He had so constantly pictured to his mind the startling effect which the metamorphosis or transformation of a negro into a white man would have upon the world at large, that he despised all minor improbabilities and impossibilities, and looked only to the ultimate effect—a black man turned white! With the greatest secresy a room was prepared, and with not a little labor and an untold number of promises, he seduced a half-idiot negro, who was also dreadfully disfigured with elephantiasis, to submit to the operation of being turned white, and the hope of which was Sambo's principal inducement for submitting to the ordeal. The room having been rendered nearly air-tight, and his victim stripped, he placed him on a stool, and commenced his labors by pouring the acid on the mineral. The gas soon rose and filled the apartment, while a distressing cough and spasm of the throat began to render his as well as

the negro's situation uncomfortable. However, he never dreamed of leaving the chamber, but fortunately for him the surgeon to whom he was apprenticed coming into the surgery, which was immediately below him, and requiring his services, he hastily left the room, fastening the door after him. He experienced much pain and inconvenience about the throat and chest, but contrived to conceal his sufferings from his master, while he compounded some prescriptions which were required on the instant. He had not however been very long thus employed, when a dull noise as of some heavy body falling on the floor attracted his attention, and he could scarcely refrain from disclosing his experiment, fondly thinking that Sambo was dancing for joy at having been turned white! But a groan following the fall he became alarmed, and his master complaining of a suffocating odour, ordered him to go up stairs, and see what was the matter, when, opening the door, he fell himself senseless on the floor, and was only saved from immediate death, by the prompt assistance of the surgeon; while poor Sambo—horrible to relate—was irrecoverably dead! The affair was hushed up. He came to Great Britain, graduated, but died two years after, as we have already said, stark mad.

We remember another case, in which a friend imprudently inhaled a quantity of impure nitrous oxide, or rather diluted nitric oxide, when in Edinburgh, and was recovered, but with difficulty. These facts, we trust, will put young chemists and experimentalists on their guard.

In DEATH FROM DROWNING, which is but another form of suffocation, the symptoms follow each other in the following manner:—"A healthy individual, in perfect pos-

session of his faculties, falls into the water from a certain height, and descends, from the impetus given by the fall, to some depth below the surface. He quickly again rises to the surface of the fluid, buoyed up by the difference in specific gravity between his body and the water, and also frequently receiving additional support from air entangled in his clothes. If able to swim, he supports himself at the surface, as long as his strength lasts him; when that fails, he is in the situation of a person who is unable to swim; in either case, he then performs movements at random with his legs and arms, and, while sinking to the bottom of the water, involuntarily grasps any object that comes within the reach of his hands. From the irregularity with which these actions are performed, he appears at the surface, and again disappears, several times successively. Whenever the mouth happens to be out of the water, a hasty gasp is made, by which water, as well as air, goes down the throat, and, exciting cough, is partly expelled from the trachea; but, by the same effort, the air that had been taken in, at the same time is also ejected. This creates a fresh demand for air; and, as soon as an opportunity occurs, another, and a more hurried attempt, is made to satisfy it. This very eagerness tends but to defeat its own object; for, if the head be but only half raised above the surface, the chance is that the water is again taken in by the effort to inspire. It is again rejected by the spasm of the glottis, and the consequent convulsive action of the muscles of the throat; and in the painful conflict of the two contending elements some water is swallowed, and passes into the stomach. All these violent efforts tend to determine blood to the head; and, that blood partaking of the venous qualities,

puts an immediate stop to the functions of the brain. Sensation and voluntary motion cease; the body sinks motionless to the bottom of the water, the pressure of which, on the sides of the chest, finally express a portion of the air that still remained in the lungs when the last effort was made." (DR. ROGET.)

Dr. Goodwyn thus records the phenomena:—"When an animal is immersed in water his pulse becomes weak and frequent; he feels an anxiety about his breast, and struggles to relieve it: in these struggles he rises towards the surface of the water, and throws out a quantity of air from his lungs. After this his anxiety increases; his pulse becomes weaker; his struggles are renewed with more violence; he rises towards the surface again, throws out more air from his lungs, and makes several efforts to inspire; and, in some of these efforts, a quantity of water commonly passes into his mouth. His skin then becomes blue, particularly about the face and lips; his pulse gradually ceases; the sphincters are relaxed; he falls down without sensation, and without motion." (CONNEXION OF LIFE WITH RESPIRATION.)

Most persons are still of opinion, as were some physicians formerly, that in drowning, death takes place from the quantity of water which gets into the lungs. Of this opinion was De Haen; but Cullen came to the conclusion, after numerous dissections, that the quantity that did get into the lungs, was insufficient to cause death. Dr. Goodwyn's investigation on this subject, says Dr. Roget, is exceedingly satisfactory, and seems to have laid the question entirely at rest. By drowning animals in colored fluids, such as ink, he ascertained that the quantity of

fluid that really entered the lungs, was infinitely less than was adequate to produce death.

Other animals he drowned in quicksilver, which, from its not mixing with the animal fluids, could be more easily collected, and its quantity determined. He thus ascertained, that only five drams of this fluid, in which a cat was immersed, entered its lungs while drowning; and, in order to determine whether or not this would occasion the death of the animal, he made the following experiment: confining a cat in an erect posture, he made a small opening in the trachea, and introduced through it two ounces of water into the lungs. The only effects produced, were a difficulty of breathing, and a weak pulse; but these symptoms soon subsided, and the animal lived several hours afterwards, without experiencing any further inconvenience. At the end of this time it was strangled, and two ounces and a half of water were found in the lungs. Similar experiments were made with other fluids, and with nearly the same result. Hence Dr. Goodwyn concludes, that in drowning, a small quantity of water does enter the lungs; that it enters during the efforts to inspire, and mixing with the pulmonary mucus forms a frothy fluid; but that the whole of this fluid is insufficient to produce the changes that take place in drowning. Mr. Kite and Mr. Coleman have confirmed these experiments, and Professor Meyer has also investigated the same question, by employing water in which hydrocyanate of potash had been dissolved, and testing the fluid found in the lungs with the muriate of iron. (MEDICAL REPOSITORY, vol. iii. New Series, p. 436.)

In the cases which we have been considering, we have supposed the person to retain his faculties; but it may so

happen, that fainting, or asphyxia, may have come on before immersion, or the person may have received a blow, or he may have been intoxicated, or he may have struck his head against something in the water; in these cases, the symptoms enumerated both by Dr. Roget and Dr. Goodwyn will of course not be present, or will be induced only in part.

We have been asked, is death from drowning painful? We should say not; and the experience of those who have been immersed in water for a considerable time and with difficulty restored to life, strengthens our opinion We are acquainted with a gentleman, who being able to swim but little ventured too far out and became exhausted. His alarm was great; and after making several strenuous but ill-directed efforts to regain the shore, he shouted for assistance, then sunk as he supposed to rise no more. The noise of the water in his ears was at first horrible, and the idea of death, and such a death! terrific in the extreme. He felt himself sinking as if for an age—and descent—it seemed—would have no end. But this frightful state passed away. His senses became steeped in light. Innumerable and beautiful visions presented themselves to his imagination. Luminous aerial shapes accompanied him through embowering groves of graceful trees, while soft music, as if breathed from their leaves, wooed his spirit to voluptuous repose. Marble colonnades, light-pierced vistas, soft-grass walks, picturesque groups of angelic beings, gorgeously-plumaged birds, golden fish that swam in purple waters, and glistening fruit that hung from latticed arbours, were seen, admired, and passed. Then the vision changed; and he saw, as if in a wide field, the acts of his own being, from the first dawn of memory

to the moment when he entered the water. They were all grouped and ranged in the order of the succession of their happening, and he read the whole volume of existence at a glance; nay, its incidents and entities were photographed on his mind, limned in light—and the panorama of the battle of life lay before him. * * * From this condition of beatitude, at least, these were the last sensations he could remember; he awoke to consciousness, and consequently to pain, agony, and disappointment. We have often conversed together upon his feelings on this occasion, and his account has never varied, so intensely were the visions graven on his memory.*

With regard to the length of time in which persons have remained in a state of syncope or asphyxia, and afterwards recovered, writers vary very much in their statements. Dr. Davy says, that he could not recover dogs that had been immersed in water only two minutes, even by means of artificial respiration and galvanism. It is thought that the temperature of the water may exert some influence. Others again think that the water itself affects the vital functions, and possibly there is truth in the conjecture, as it is said, that no persons recover who fall into the river Lea, even if they be in its waters ever so short a time. On the other hand there are cases recorded, and it would seem on sufficient authority, of persons having been restored to life who were a long time under water. Tissot mentions the case of a girl, who was restored to life after she had been taken out of the water swollen, bloated, and to all appearance dead,

* Mathews, the comedian, gives a very different account of his sensations when, on one occasion, he was nearly drowned. See the first volume of his MEMOIRS.

by laying her naked body upon hot ashes, covering her with others equally hot, putting a bonnet round her head, and a stocking about her neck, both filled with ashes, and heaping coverings over all. After she had remained half an hour in this situation, her pulse returned, she recovered her speech, and cried out, "I freeze, I freeze!" A little cherry brandy was then given her, and she was allowed to remain buried, as it were, under the ashes for eight hours. Afterwards she was taken out without any other complaint except that of lassitude or weariness, which went off in a few days. The same authority mentions the instance of a man who was restored to life by the heat of a dunghill after he had remained six hours under water! We can reconcile the conflicting accounts of Davy and Tissot, by supposing that the man and girl had fainted previous to, or at the moment of immersion; in which case, circulation being suspended, it is possible to believe that the persons here mentioned might have been under water for the time specified, without receiving any fatal injury.

However, very great authorities are against us. Dr. Roget says, if the submersion have not exceeded five minutes, and no blow against a stone or other violence has occurred to complicate the effects, our efforts of resuscitation, if properly conducted, will generally be successful; and subsequently, in reference to those cases where recovery is said to have taken place after immersion for any length of time, he writes—"The numerous cases on record in which it is alleged, that life has been restored after being several hours under water, are totally unworthy of credit." This is very strong language; for the Doctor himself admits, that "after a quarter of an hour's

immersion recovery is not very common," which means recovery MAY take place, and that "the longest period recorded in the Reports of the Royal Humane Society, is three quarters of an hour." And again: "It appears, from the first report of the Establishment for the Recovery of Drowned Persons at Paris, that out of twenty-three cases restored to life, one had been three-quarters of an hour under water, and four had been half an hour." Now, if it be admitted that a man may be, nay, men have been, recovered, after half an hour, or even three-quarters of an hour's immersion, we cannot conceive why another should not remain several hours, or where there is nothing noxious in the water, and asphyxia has taken place, before immersion, several days? We admit this to be a very extreme case; but we have no right to reason against the possibility of a thing from its absence, and more especially when there are authorities to vouch for its having been. It is this intolerance on the part of knowledge—and to which we have before alluded in the case of Sir Humphrey Davy, and the introduction of gas, and we might have added also, of Sir W. Scott, who, in a letter written to a friend from Milan, in the early part of his career, states that he had met with many mad people, and had heard of many mad schemes, but the maddest he had ever heard, or met with, was in the person of a young chemist of that city, who proposed to light the town with gas—of which we complain. We do not think Dr. Roget, or any other medical writer, is justified, by a single dash of the pen, to condemn as unworthy of belief what respectable authorities relate, and so many persons of knowledge and science, by no means contemptible, firmly believe. The Indian divers of Ceylon remain

three, four, and even five minutes under water (PERCIVAL'S HIST. OF CEYLON); and other instances are recorded, of persons remaining for a very considerable period immersed in water, the most remarkable example of which, that occurs to our memory at the present moment, is that of the Sicilian diver, Nicolo Pesce. But of him hereafter. Gmelin says, that the Astracan divers remain seven minutes under water: Beckman, that the divers in Holland are more expert, that is, they can remain a longer time under water than the Astracan divers; for an observer, wishing to satisfy himself of the length of time they remained below the surface, endeavoured to hold his breath, but was obliged to breathe at least ten times while they continued under water, or, in other words, these divers held their breath ten times as long as he could: Oldenburg relates, that the pearl divers in the East Indies can remain under water one quarter of an hour; and some assert, that they continue longer: Mersenne mentions a diver, John Barrinus, who could continue under water six hours: and Maffæus, that the natives of Brazil will remain several hours under water, with their eyes open, in order to search for any thing at the bottom. All circumnavigators make mention of the dexterity of the savages in diving and swimming; and most travellers, who visit the Indian seas, relate the same facts. Kircher records the case of a Sicilian diver named Nicolo Pesce, "who could remain under water for a whole day, and who at last perished in diving to explore the whirlpool of Charybdis." Blunt, in his Account of the Island of Samos, says, that "the divers from their infancy are bred up with dry biscuit, and other extenuating diet, to make them extremely lean; then, taking a sponge

wet with oil, they hold it part in their mouths, and part without, and thus dive under water, where at first they cannot stay long, but after due practice, some of the leanest will remain an hour and a half, or even more, until all the oil of the sponge be corrupted; and, by the law of the island, none of that trade is suffered to marry, until he have staid half an hour under water: thus, they become able to gather sponges from the bottoms of rocks, more than a hundred fathoms deep." From what we ourself have seen of negro divers in the West Indies, we are convinced that men can remain with impunity from two, three, to perhaps four minutes, under water, without any great practice; but, like every other art, some persons have more aptitude for acquiring it than others, and others, again, cannot even learn the art of swimming.

We hesitate not to mention the following fact in corroboration of our opinion:—While coasting round the island of Jamaica in the years 1836-7, in a drogger, or smack, we had the misfortune to be taken in a squall; and, to save the vessel from wreck, the anchor was let go suddenly in forty fathom water, which snapped the cable near the ring-bolt, and we were saved only by a dexterous manœuvre of the captain. After the subsidence of the squall, as is usual, a dead calm succeeded, and the crew prepared to fish up the anchor. A short, squat, but very athletic black, having tied a handkerchief round his head very tightly, stripped himself, and without any other preparation, leaped off the deck, and disappeared from the surface. He remained so long under water that we became apprehensive that he had fallen a prey to the numerous sharks on the coast, but, to our relief, he appeared at the surface, informed the crew that he had

found the anchor, and having taken a rope, disappeared again, and, as the water was exceedingly clear, we could see him for a long time descending, till the increasing medium shut him out from view. We did not think of timing him, but we are justified in saying that he could not have been under water less than three minutes, and probably it was four, as the rope required to be made fast to the fluke of the anchor, before he could ascend. In the end the anchor was secured, and on expressing our admiration of his skill, and presenting him with a dollar, he made a bow, or, as the negroes say, "pulled foot," and leaped over-board again, swimming round and about the vessel like a fish; sometimes, with one leg round his neck, or his toe in his mouth, or both legs up like masts, then diving, and appearing again at a considerable distance from the vessel. Another of the crew offered, for a similar sum, to do more than this fellow, but he was prevented by the captain. The Camanas turtlers, too, when diving and seizing turtle by the neck, remain under water till the animal is exhausted, and then rise with him to the surface, and this must certainly be a period of more than two minutes.

Nay, we have undoubted proofs that persons may remain a longer period under water than is allowed to be possible by some physiologists. Taylor relates the case of a boy, the son of Mr. Baldock, a surgeon at Burwash, in Sussex, who fell into a pond, and remained a quarter of an hour before any one came to his assistance, but by employing the usual remedies he was restored to life; and, finally, many more instances might be related, did our space permit.

DEATH FROM STRANGULATION, OR HANGING, is rarely if

ever produced by apoplexy, as is very generally believed by the vulgar. De Haen ascertained this from numerous experiments on dogs, which he hanged, and opened as soon as they were dead, and no marks of apoplexy were discovered in the brain. The elder Monro, of Edinburgh, proved to demonstration that the immediate cause of death in hanging is owing to exclusion of air from the lungs, and not from any other cause. A dog was suspended by the neck, an opening having been previously made in the windpipe, below where the cord was applied to the neck, so that air could pass into the lungs as freely as in ordinary respiration. "After hanging in this state for three quarters of an hour, during which time the circulation and the breathing went on as usual, he was taken down, and appeared not to have suffered materially from the operation. The cord was then shifted from above to below the opening made in the trachea, so as totally to prevent the ingress of air into the lungs; and the animal being again suspended, was in a few moments completely dead." (CURRY, OBSERV. etc. p. 71, quoted by Dr. Roget.) It is thought, however, that the pressure of the ligature on the jugular veins of the neck has a considerable share in hastening the period of death; so that, from this double cause, death by hanging is not painful; nay, an imaginative Frenchman has written a work, to prove that hanging is a more agreeable, and, in short, desirable mode of going out of the world than any other; because, independent of some pleasurable emotions which are thought to arise in the mind, from the accumulation of blood in the vessels of the brain, the reproductive organs are stimulated, and the reproductive organism which

really takes place in most cases of hanging, is present. Dr. Elliotson says there is an account, in Lord Bacon's works, of a person who was hung, and all but killed, and yet he did not suffer. There is another of Cowley, the poet, (which is very scarce,) from which it appears, that he three times attempted to commit suicide, and one of these attempts was by suspension. The account was written by himself, and found among his manuscripts. He there mentions, that he suspended himself over his chamber-door in the Temple, and became perfectly insensible. He only recollected a flash of light appearing before his eyes. His weight at last caused him to drop on the floor; there he was found; and after a time he recovered. He says, that although he was thus in the jaws of death, and had become perfectly insensible, yet he had no previous suffering in that state. (DR. ELLIOTSON'S LECTURES, reported in THE LANCET.)

Partial obstruction of the trachea, therefore, does not cause instant death; but generally, if the obstruction be complete, the patient soon expires. Anacreon is said to have lost his life, in his eighty-fifth year, from a grape-stone sticking in his throat, while in the act of quaffing some new wine; and Otway, having suffered the pangs of hunger for several days, and accidentally meeting with a gentleman on Tower Hill, who gave him some money, the starving poet hastily purchased a roll, and devouring it greedily, the crust stuck in his throat, and suffocated him. That eminent physician, Dr. Abercrombie, on the other hand, seems to think, that death from hanging is produced by apoplexy. He says: A boy mentioned by Zitzilius had drawn his neckcloth remarkably tight, and was whipping his top, stooping and rising alternately;

when, after a short time, he fell down apoplectic, the neckcloth being unloosed, and blood being drawn from the jugular brain, he speedily recovered. Strangulation, when the neck is not dislocated, appears to be simply apoplexy. A man brought after execution to Sauvages was recovered by three bleedings, and sat up and talked, his breathing and deglutition being natural. After a short time, the part of his neck where the cord had been applied began to swell, so as evidently to impede the circulation in the veins of the neck: he then became drowsy, his pulse and respiration slow, without dyspnœa, and in a few hours he died of apoplexy. A woman mentioned by Wepfer recovered after execution under the same treatment. After her recovery she was for some time affected with vertigo, which subsided gradually. (DR. ABERCROMBIE ON THE BRAIN.)

That persons have recovered who have been suspended by the neck the time directed by the law, there is not the shadow of a doubt; and Mr. Glover, late of Doctors' Commons, relates the case of a person who was restored after hanging twenty-nine minutes. Dr. Plott records the case of Snetta de Balshaw, a woman, who, in the reign of Henry the Sixth, after being suspended for a whole night, was cut down and found alive. She was accordingly pardoned by the king. In this case, however, there was ossification of the larynx, which of course allowed her to breathe. Dr. Roget says: "Attempts have often been made to defeat the object of the punishment, by introducing a silver canula into the trachea, previous to the execution; but the intolerable irritation excited in so sensible a part as the glottis, by the presence of an extraneous body, must ever preclude all hope

of success from such a project. If the methods practised in Dr. Monro's experiment on a dog were adopted in the case of a person intended for execution, it might certainly be attended with a successful result. It is recorded, indeed, that an expedient of this kind was actually tried in a remarkable case, the particulars of which are given by Dr. Mahon. (MEDICINE LEGALE ET POLICE MEDICALE, tom. iii. p. 62.) A butcher, of the name of Gordon, was condemned to execution, at the Old Bailey, for highway robbery, in the beginning of the last century. 'Having amassed great riches by his successful career of crime, he persuaded a young surgeon, by the hope of a great reward, to attempt to save his life. The surgeon proposed the plan of making an opening low down in the trachea, and introducing through it a small canula. This was secretly accomplished previous to the execution. The blood that was effused in consequence excited some suspicion, but, being attributed to a desperate attempt at suicide, the circumstance only occasioned the hastening of the hour of his execution. After the body had hung the usual time, it was taken down, consigned to the relations, and quickly removed to a neighbouring house, where the surgeon was anxiously waiting to receive it. He immediately drew some ounces of blood from the jugular vein, and used every means calculated to restore animation. He opened his eyes, heaved a deep sigh, but expired a few minutes after. The failure of success was attributed to the great weight of the body, which increased the violence done to the parts compressed by the rope."

It was currently reported, and believed, that Dr. Dodd was restored to life after his execution—a silver canula having been passed down the trachea, which, it was said,

enabled him to breathe. But a still more extraordinary case has been recently before the public; we allude to that of Fontleroy, the banker. Not twelve months ago an affidavit was made in one of the courts that he was then alive and in good health, in America; and, what is more, on that affidavit certain proceedings, we believe, were stayed. Conversing on the subject with an American gentleman, whom we accidentally met in a coffee-house, he declared that he had reason to believe that Fontleroy was yet alive, and that he had been saved by an opening made in the trachea before his execution.

But other authentic and accredited cases can be adduced, which will prove the wonderful vitality or tenacity of life in some individuals. In the year 1658, Elizabeth, the servant of one Mrs. Cope, of Magdalen College, Oxford, was convicted of destroying her illegitimate child, and was accordingly hanged at Green-ditch, where she remained suspended so long, that one of the by-standers said, if she was not dead, he would be hanged for her. When cut down (the gallows being very high) she fell with such violence on the ground, that it seemed sufficient of itself to have killed her. After this, she was put into a coffin, and carried to the George Inn, in Magdalen parish, where symptoms of returning life being perceived, she was blooded, and put to bed to a young woman. In a short time she recovered, and to all appearance might have lived many years; but, the news reaching the ears of the Sheriff, one Malony, she was barbarously dragged to Gloucester Green, and there hanged on a tree, till she was dead.

The two following cases are similar, the one occurring again at Oxford, the other in Paris:—"In the year 1650, Anne Green was tried at Oxford, before Serjeant Ump-

ton Croke, for the murder of her illegitimate child, and, by him, sentenced to be hanged; which sentence was accordingly executed on the 4th day of December, in the Castle yard, Oxford, where she hung about half an hour, being pulled by the legs, and, after all, had several blows given her on the stomach with the butt end of a musket. Being cut down, she was put into a coffin, and carried to a house to be dissected; where, when they opened the coffin, notwithstanding the rope remained fastened firmly round her neck, they perceived her chest to rise: whereupon one Mason, a tailor, intending an act of humanity, stamped on her chest and abdomen; and one Oran, a soldier, struck her with the butt end of his musket. After all this, when Sir William Patty, Dr. Willis, and Mr. Clarke, came to prepare the body for dissection, they perceived some small rattle in her throat, which induced them to desist from their original design, and began to use means for her recovery, in which they were so successful, that within fourteen hours she began to speak, and the next day talked and prayed very heartily. Nor did the humanity of the doctors stop, till, by obtaining a pardon for her, they secured that life their skill had restored. She was afterwards married, had three children, lived in good repute among her neighbours, at Steeple Barton, and died in 1659. What was very remarkable, and distinguished the hand of Providence in her recovery, she was found to be innocent of the crime for which she suffered; and it appeared that the child had never been alive, but came from her spontaneously, four months after conception."

A similar case.—In the year 1765 an innocent young country girl, of handsome and engaging person, was hired

as a servant by a man, who, unfortunately for her, was contaminated with almost every vice incidental to human nature. This wretch was so struck with her beauty, that he left no means untried to seduce her; but she was innately virtuous, and resisted all his wicked attempts. Being a stranger at Paris, and without any friend to receive her, she dreaded to quit the house of her persecutor, and with equal reluctance continued. At length her virtuous resistance so inflamed this wretched being, that, not being able to gratify his desires in the manner he wished, he formed the most diabolical plan of vengeance that ever entered the human mind. He privately conveyed a quantity of plate, marked with his name, into the box where the girl kept her clothes, and then, declaring he had been robbed, sent for an officer of police, had her taken into custody, and made his report to the magistrate of the things that were missing. The officer, on opening her box, and finding the articles supposed to have been stolen, communicated the information to the magistrate, who, being fully persuaded of her guilt, committed her to prison. Here she fell on her knees, and supplicated the monster, but in vain; her tears were the only proof of her innocence, in opposition to the apparent fact, laid to her charge, which appeared to be incontrovertible. She was shortly after brought to trial, where, with the aid of the master's circumstantial evidence, she was found guilty, ordered for execution, and, in short, was hanged. But mark the secret workings of Providence in behalf of an innocent victim! The executioner was a novice in his profession, and, in adjusting the rope round the neck of this poor creature, he fastened it so awkwardly, that respiration was not entirely stopped. After hanging

the usual time, the body was cut down, and sold to a surgeon, (formerly, in France, the bodies of criminals after execution were a part of the hangman's perquisites, who had liberty to dispose of them as he thought proper,) who ordered it to be removed to his house for dissection. In the evening, when about to commence the operation, he thought he discovered an unusual warmth in all parts of the body. On holding a glass to her mouth, he perceived a dulness and humidity on its surface, which led him to conclude that the action of the lungs had not entirely ceased. The almost fatal knife immediately fell from his hand, and with great humanity he had the body put in a warm bed, where, after applying the usual remedies in cases of suspended animation, he had the satisfaction to find his efforts effectual, in restoring to life this unfortunate innocent. The surgeon then sent for a priest, to whom he was known, and in whose prudence and secrecy he could confide, and after telling him the particulars of this strange affair, requested him to be witness of his conduct, and to further aid him with advice. When this poor unfortunate creature opened her eyes, and beheld the priest standing near her, she believed herself in the regions of the blessed, clasped her trembling hands together, and exclaimed, 'Eternal and heavenly Father, you know my innocence! Have mercy upon me!' Nothing could be more moving and expressive than the supplication of this much-injured girl, who, being raised from a death-like state, fancied herself in the presence of the Supreme Judge, and, in fact, could hardly be prevailed upon to desist from her invocations to the priest as to the Almighty; and so strongly was the idea of her late dreadful sufferings impressed upon her, that it was with much difficulty she

could be persuaded she was again an inhabitant of the earth. (TABLEAU DE PARIS, par MERCIER.)

Where a thing, therefore, is possible, and there are many to vouch for its having been, we see no reason to doubt its happening again, merely because it may appear to militate against certain preconceived notions and theories, and to be opposed to the views of certain physiological schools. Until Cullen shewed that death by drowning did not happen from water forcing its way into the lungs, all physicians believed death to take place in that manner; and until the recent experiments of Cely and Thièle, with the varioloid virus upon cows, strangely enough corroborated by experiments made by Gassner in Germany in 1803, and which have recently come to light, the identity of small-pox and cow-pox was doubted, or disbelieved. They are now pretty generally considered as one and the same disease; and, for our own part, we think we have every reason to suppose they are. (See Dr. A. Muhry, in the PROVINCIAL MEDICAL JOURNAL, May 14, 1842.)

In DEATH BY COMA, sensibility, thought, and voluntary motion cease first. Respiration, which depends on sensibility, fails next; and lastly, the blood not being arterialized, the heart ceases to act, from the same cause as mentioned in death from suffocation; that is, its fibres or muscular tissue becomes penetrated by venous blood, and the person dies "poisoned by his own blood." The phenomena which distinguish death beginning at the brain from death beginning at the lungs, are simply, that the circulation of venous blood through the arteries in the first case, is the EFFECT of the cessation of the phenomena of animalism; and in the second, it is the CAUSE of that ces-

sation. But there is a modification in the order of progression of the phenomena of this last-mentioned kind of death: it is, that respiration continues sometimes even after voluntary motion and all appearance of sensibility are lost. This is the state of COMA, or APOPLEXY.

In DEATH BY SYNCOPE, or simple fainting, the pulsations of the heart are first arrested, and, as the brain ceases to be stimulated by the blood, sensation, voluntary motion, the cerebral phenomena, and lastly, respiration, gradually fail. In this case, breathing is the latest act of life; and here only, says Dr. Gregory, in strict pathological language, can an animal be said to "expire."

It is seen, then, in this kind of death, that the mere cutting off of the supply of blood to the brain, or to any organ of the body, is not nearly so fatal as the intromission of venous blood into any of the tissues of the body. This will explain why persons recover so easily from a fainting fit, even though sensation and thought be as completely at a stand, as in the case of a drowned man. Dr. Gregory says, so rare is death beginning at the heart, in comparison with the other modes already noticed, that physiologists have characterised this organ as the ULTIMUM MORIENS—the last thing dying.

Sudden death occurring at the heart takes place from the action of certain poisons, as the upas antiar, and tobacco, in the sudden admission of air into the veins, which is one of the most rapid modes of producing death: hence knackers in England, and horse-slaughterers on the Continent, destroy these animals, by blowing into their veins.

It sometimes happens, however, that the suspension of animalism has not accompanied, or at least has not been proportioned to, the failure of organic life. This anomaly

occurred in the case of the celebrated John Hunter, who continued for about three quarters of an hour without any sensible pulsation at the wrist, or any respiration, except what was produced by an effort of the will, while he retained his powers of sensation, thought, and voluntary motion.

DEATH OCCURRING FROM SIMULTANEOUS CESSATION OF ANIMAL AND ORGANIC LIFE, may be caused by taking large quantities of arsenic; by exposure to the fumes of sulphur; by lightning; and lastly, from violent impressions made on the brain and spinal marrow at one and the same instant, such as happens to a miner, when the earth suddenly falls in upon, and pressing him on every side, forces the air out of the lungs, while it crushes the brain at the same instant; or, as in the case of those horrible rail-road accidents, which, Moloch-like, content not themselves with an ovation, but demand a hecatomb of victims.

Such are the FOUR modes by which death is brought about; but it is obvious that the view we have given must be a very general one. For, sometimes difficulty of breathing is the first symptom, as in croup; sometimes fainting, as in loss of blood; sometimes coma, as in apoplexy; and lastly, when all these symptoms present themselves so rapidly, that it is impossible to mark the order of their appearance—all the phenomena of life being apparently arrested at one fell swoop—as in gangrene and arsenicism.

It will doubtless occur to all non-professional readers, after perusing this account of the four kinds of death, that the means very frequently employed to resuscitate the drowned, or those who have been exposed to the in-

fluence of mephitic gases, rather hasten death than restore animation; and therefore the greatest care should be observed in the administration of remedies. Rubbing the body with warm, not hot cloths; gently inflating the lungs, and cautiously administering small quantities of warm brandy and water, will be found conducive to the recovery of the patient; and more should not be attempted by inexperienced, or non-medical attendants. An instance, where a person was recovered, and from want of proper attention suffered to relapse and eventually to die, is given by Dr. Paris, in his LIFE OF SIR HUMPHRY DAVY. A corporal of the Guards of the name of Schofield, was seized with cramp as he was bathing in the Thames, in the neighbourhood of Windsor, and remained for several minutes under water. By judicious assistance, however, he was recovered, and appeared to those about him free from danger, when he was suddenly attacked by convulsions, and expired. Dr. Roget, in noticing this case, says, that had artificial respiration been resorted to, so as to have maintained the action of the heart, until the black or venous blood had returned from the brain, it is probable that the life of the soldier might have been preserved.

Let this therefore be a warning, that we are never to consider the patient free from danger, in less than forty-eight hours after recovery, notwithstanding any favorable symptoms to the contrary.

Since writing the above, a discovery by a French gentleman would seem to support our argument. We give the account, as printed in THE TIMES of May 21st, 1842, without comment:—"Important Invention.—A French gentleman, Dr. Payerne, has just made a dis-

covery likely to be of great use in submarine experiments and purposes. He proved yesterday morning that he can descend, and remain under water for any length of time, without communication with atmospheric air. He descended, in the presence of several scientific men, in the diving-bell of the Polytechnic Institution, at nine o'clock, and remained there for three hours, when he ascended, having no appearance (of having suffered) inconvenience. His process is, of course, a reproduction of the gases necessary to support life and also combustion, as was proved by his taking with him some candles, which he kept burning whilst below; and he intends applying it to salvage and submarine purposes, for examining dock gates, foundations of bridges, ships' bottoms, etc., as soon as his patent is sealed."

CHAPTER XII.

MESMERISM.—ITS PHENOMENA INVOLVED IN OBSCURITY.—THE AUTHOR'S CONVICTION OF ITS IMPORTANCE AS A CURATIVE AGENCY.—INQUIRERS TO JUDGE FOR THEMSELVES.—SPURZHEIM ON SPORADIC MESMERISM.—M. LAFONTAINE'S PATIENT.—DR. ELLIOTSON'S PATIENT, ROSINA.—EXTRAORDINARY POWER POSSESSED BY ELIZABETH OKEY.—REFLECTIONS UPON THIS CASE.—A SIMILAR FACULTY DEVELOPED IN A DUTCH LIEUTENANT RESIDENT AT WOODBRIDGE, IN SUFFOLK, AND PRESERVED BY GLANVIL.—DEEPLY INTERESTING CASE BY DR. ELLIOTSON.—CAPTAIN VALIANT'S EXTRAORDINARY PHRENOLOGICAL CASE.—OPERATION BY DR. CHARLTON, OF CHATHAM, ON THE SAME PATIENT, MESMERISED BY MAJOR-GENERAL SIR THOMAS WILTSHIRE, WITHOUT HER BEING AWARE OF THE OPERATION.—CASES OF M. JULES CLOQUET.—EXTRACTION OF A TOOTH, WITHOUT PAIN, DURING THE MESMERIC TRANCE.—CLAIRVOYANCE.—LUCID VISION.—HELLESEHEN.—ALLGEMEINE KLARHEIT.—SINGULAR AND WONDERFUL CASE BY DR. ABERCROMBIE, OF EDINBURGH, OF A SOMNAMBULIST.—CASE BY DR. PETETIN.—M. RICHERAND'S UNPHILOSOPHICAL REMARKS ON DR. PETETIN.—DR. COLLYER, OF BOSTON, IN AMERICA.—BARON CUVIER'S ADMISSION OF THE MESMERIC PHENOMENA.—PROFESSOR DUGALD STEWART'S OPINION.—REFERENCE TO WRITERS ON MESMERISM.

OF ARTIFICIAL SOMNAMBULISM, or MESMERISM, as intimated in a preceding chapter, it was our intention at first to decline the consideration; but having subsequently witnessed some striking cases of a very exalted condition of this state, we have determined not only to examine its claims to attention, but to inquire into its merits as a curative process, at once inscrutable in its action, and prodigious in its consequences.

We candidly confess that the first cases we saw

scarcely convinced us; but having, by the complaisance of our friend Dr. Elliotson, been present again and again, when he exhibited those extraordinary and unexpected phenomena in several patients which we shall presently detail, we no longer hesitate to subscribe to the reality of Mesmerism, and to admit ourself a convert to its truth. The following essay however, will be necessarily short, as we have already exceeded the limits prescribed when we commenced this work. But it will be sufficient to shew that the question is one of vital consideration, and of exceeding interest; while in our present state of knowledge, to attempt to account for the phenomena of an agency so obscure, so complex, and so mysterious, would only render the subject more perplexing and inexplicable than we already find it, and we shall therefore confine ourself solely to the registration of cases and the relation of phenomena. Neither shall we enter into any history of Mesmerism, as narrative detail would detain, and prolix dissertation attenuate the interest awakened by the feeble efforts of an inefficient description; for, as the mind cannot conceive, so, no language can express the wonderful results of this tremendous agent, and its complete despotism over the mental and voluntary powers of man. And it may not be altogether misplaced here to remark, that as we write, neither to entice converts, nor to impose dogmas, but simply to detail facts, all we ask is, to be read with attention, and examined with temper—neither shall we be surprised at the sneer of incredulity, or the scorn of scepticism; nor feel hurt by the *shaft* of ridicule, nor wince at the thrust of wit; for, having ourself once doubted, we concede the same right of dubitation to all; but, at the same time, we must entreat, that the

well-informed Christian, and the deeply-read philosopher, will examine and judge for themselves, before they pronounce any opinion for or against the truths of Mesmerism. With this appeal, we proceed with the subject.

Dr. Spurzheim, speaking of somnambulism, which is sporadic, or natural mesmerism, says, "The same phenomena present themselves when in the state of somnambulism produced by animal magnetism. It has been repeatedly observed, that some magnetized persons acquire new consciousness and memory during their magnetic sleep. When this state has subsided, all that passed in it is obliterated, and the recollection of the ordinary state is restored. If the magnetic sleep is recalled again, the memory of the circumstances which occurred in that state is restored, so that the individuals may be said to live in a state of divided or double consciousness."

We can add our testimony to these statements of Dr. Spurzheim. The young Frenchman mesmerised by M. Lafontaine could recollect nothing that occurred to him during the mesmeric sleep, not even when, on one occasion, a monster thrust a sharp instrument, probably a lancet, into the calf of his leg, and caused a considerable effusion of blood! On another occasion, two of his fingers were burned with lucifer matches; and though the blisters were visible, he neither recollected this cruel proof of insensibility, nor perceived any sensation of pain!

In the case of a girl, Rosina ——, who is repeatedly thrown into the mesmeric sleep by Dr. Elliotson, her muscular power becomes vastly augmented, so that no two persons present can sunder her arms when clasped together by the hands, without employing a force that would be physically hurtful. She gives replies to question

put to her readily enough, but always imagines the person interrogating is some one else. After some persuasion, she sings in a very silent, soft, and melodious voice, then relapses again into mesmeric sleep, from which she awakes of her own accord, about twenty minutes or half an hour after. Dr. Elliotson can, by raising the tips of his fingers near the eye, open the lids; but they immediately close on withdrawing them, when she sinks back into insensibility. On awaking, she recollects nothing of what has passed during the period of her mesmeric trance.

We have witnessed phenomena still more startling in other patients, particularly in one of Mr. Brookes's and one of Captain Valiant's; but our object is not to encumber with quantity or distract by variety, and it seems therefore more fitting that we should proceed with the case of Elizabeth Okey, as it has attracted most attention, and excited much discussion. We extract the detail from Dr. Elliotson's address to his class, on resigning the chair of Medicine in University College, and think it will be admitted that the narrative carries conviction with it, for what motive could Dr. Elliotson have in falsifying the report? What object had he to gain in pursuing the investigation of the mesmeric phenomena, of which he was not already possessed? Or can any honorable-minded man conceive that he would lend himself to imposture; and for what? And so far as to his being deceived by the girl, why, it involves a still more inexcusable postulate, since it is assuming that powers are possessed by an ignorant girl, which are as wonderful as the lucidity of which the Doctor's adversaries affect to doubt. But Dr. Elliotson requires no defence at our hand, and we shall therefore

proceed with the case: "Some persons have an idiosyncrasy to be affected by emanations which have no perceptible effect on mankind at large. Some have catarrh and asthma, when near certain grasses in flower; some, when near a hare, dead or alive; some have an indescribable sensation of a most distressing kind when near a cat. Elizabeth Okey has a sense of great oppression, sickness, and misery, when within a certain distance of persons whose frame is sinking. The emanations which are constantly proceeding from us all are so altered in their composition, I presume, in extreme debility, that a high susceptibility may suffer from them. Whenever the effect upon her has been of a certain intensity, I understand that the patient who produced it has died. The phenomenon had been known to the nurse, and invariably verified by her for a long period before I heard of it: and Elizabeth Okey only by chance communicated it to me in November during her delirium. When not in a mesmeric state, that is, when not delirious nor somnambulist, she has not this idiosyncrasy, and is perfectly ignorant that she ever has it. In her somnambulism she has it simply; but, in her delirium, it is attended by an illusion that she sees a figure, something like the representation of Death, wrapped in a white robe. The more intense the oppression from the emanations, the taller the figure; the stronger therefore are the emanations and the nearer the person to his end. This is perfectly in accordance with the phenomena of dreams, which are a sort of delirium. If we have an inflammation of the foot, the heat of this is very likely, in our dreams, to make us fancy the part is roasting on the bars of a grate: if we have the rheumatism, we may dream that some one is giving us the bastinado:

in oppression of the breath, we may dream that we see a demon sitting upon us—in short, have the night-mare; and it is very conceivable, that, the more distressing the oppression, the larger might the figure be imagined. Thus, the sensation, which she knows to arise from the influence of a person hurrying to the grave, gives her a fancy that she sees the figure, when in her delirium; but, if she is near a sinking person when in a state of somnambulism, in which her reason is sound, she not only has the sensation merely,—sees no figure, but tells you that the idea of the figure in her delirium is a delusion—the product of delirium. On learning this wonderful fact, I examined carefully into it, and ascertained its reality. But, having had, among a few of the students who have signalized themselves, some by scribbling and some by talking, experience of the falsehoods and absurd objections to which all the mesmeric phenomena of my patients were exposed, I resolved to conduct her into my other ward, in which she was unacquainted with the diseases of the patients and with the patients themselves, and to conduct her there at the close of the day, when she could not see the patients. Accordingly, about five o'clock, in December, I begged the nurse of the ward to accompany us. I enjoined the little girl not to utter a word, and I led her, not to the bedside of patients, but up one side of the ward and down the other, without stopping; and no one knew the object I had in view. I felt her shudder as she passed the foot of two beds, and after leaving the ward she told me that she had felt the sensation, and seen the figure, which she in her delirium, but in her delirium only, calls Jack, at two of the beds. The nurse informs me that, in passing one bed, she heard her whisper, "There's

Jack!' while she shuddered; but I did not, although I had hold of her hand the whole time. This patient, who was then in a state of perfect insensibility, soon died; the other, I hear, is still alive, but his disease will be, from its nature, necessarily fatal. I considered it my duty to inquire into this interesting fact. There was nothing in it contrary to established physiological and pathological truths; but it was an unusual modification; and, had I not inquired into it, I should have been devoid of all spirit of professional inquiry, and, moreover, should have exposed the innocent and excellent little girl to another false and base accusation of imposture."

This case of Elizabeth Okey, however, is not without parallel; and it is remarkable that Dr. Elliotson was unacquainted with the fact until we informed him of it. Glanvil records a similar property of perceiving the emanations from bodies about to be resolved into their primitive elements, possessed by a Dutch Lieutenant, who, he tells us, was blown up with Opdam, but was taken alive out of the sea. On being brought a prisoner to England, he was set at large on his parole, and appears to have resided at Woodbridge, in Suffolk, as it was in this town that he was celebrated for seeing the shadowy recriminations of departing life. Glanvil says, that the Rev. Mr. Brown, from whom he had the account, on a certain occasion applied to him to know if the reports, which were current, of his seeing ghosts, were true or false? He replied, that it was true, but that he saw none at that time. Subsequently Mr. Brown met him in the street, when on putting the same question to him as he had formerly done, he assured him that he saw one over such a house and that it looked upwards, "flinging one arm with

a glove in his hand." He at the same time declared that it was advancing towards them, and that if they did not get out of the way, it would knock them down. Mr. Brown, seeing nothing, does not seem to have believed him, and did not get out of the way; when suddenly the Lieutenant fell down in a fit, but which of course Glanvil attributes to the presence of the ghost. The poor epileptic recovered but slowly from this attack, and accompanied Mr. Brown to his house; when the church bell ringing to announce a death, as is usual in country towns, a servant was despatched to know who it was. On her return, she told them it was that of a tailor, who had died suddenly, though he had been long suffering from consumption. "And on inquiring after the time of his death, they found it was as punctual as could be guessed at the very time when the ghost (shadowy recrimination of corporeal atoms!) appeared. The ghost had exactly this tailor's known gait, who ordinarily also went, one arm swinging, and a glove in that hand, and looking on one side upwards." (SADDUCISMUS TRIUMPHATUS.)

This is one of the many extraordinary conditions of the cerebral organs, when they are indued with a more than ordinary power of volition, vision, or fore-knowledge; which latter would seem to be an exquisite and inconceivably rapid exaltation of the powers of judging of the probabilities of coming events, or of what may happen. At least this is the only explanation which our very limited knowledge of mesmeric phenomena will permit us to hazard.

We were present when a most extraordinary case was exhibited at Dr. Elliotson's. The patient was a young gentleman, about seventeen. His figure slim, but not spare;

his eyes hazel; his complexion bilious, or, more properly speaking, partaking of the nature of a brunette's; and his hair dark. He appeared a modest and unassuming youth, and was dressed in black trousers and round jacket. Being seated on a sofa, directly before a large window, Dr. Elliotson commenced his experiments by placing his right hand extended directly opposite or a little above the eyes. In a few moments he fell back fast asleep. The Doctor then extended his arms horizontally, and made longitudinal passes upon them; and in this position they remained, like a cataleptic's, steadily fixed. A similar experiment was then made with his legs—the extension commencing at the hips. In this position he could be rocked backwards and forwards on the sofa, like a Dutch toy, and no mechanical force could change the position of a single joint. From this state he was thrown into another; in which he evinced great fear of being separated from the mesmeriser, and attached himself so firmly to Dr. Elliotson, that he could not be separated by any force that was used; but by merely breathing for a few seconds on his hands, or by the Doctor applying his to them, the separation was easily effected. This part of the experiment was certainly very extraordinary. Another circumstance which was perfectly astounding was, that if any one touched him, however lightly, he immediately complained of cold. Not so, if the Doctor touched him. To test this still further, Captain Valiant, who had a riding-whip, silver mounted, touched him with the end, when he immediately complained of cold, though during all this time he was fast asleep, or rather somnambulitic. This case is of peculiar interest, as it is so similar to that of Eugene, the young

French lad, on whom M. Lafontaine made his experiments.

But if this was an extraordinary exhibition, the following is still more so:—The patient was a spare thin woman, of an excitable temperament, with a pale cast of countenance, reddish hair, hazel eyes, and about four feet and a half or five feet in height. Her age from twenty-six to thirty. She was attired as women in her station of life, which we believe is that of lady's maid. Her master and mistress, Captain and Mrs. Valiant, were present. When we entered the drawing-room beside the Captain and Mrs. Valiant, Sir Thomas Wiltshire, Mr. Wood, and two other gentlemen were present. Mrs. Gregory, (that is the name of the patient,) appeared alarmed, and very pale. A glass of water was brought her, of which she took a part; and her bonnet and shawl being removed, as the day (the 11th of June) was uncommonly warm, she seemed to revive. Very shortly after, Dr. Elliotson entered the room, and subsequently Lady Lovelace, Mr. Contes of the Society for the Diffusion of Useful Knowledge, Dr. Syme, and many others. The patient being placed in a chair, Dr. Elliotson commenced the experiment by directing his hand in a horizontal position to the præcordia, or perhaps the epigastrium. In a few moments convulsive twitchings of the hands began to appear. She seemed distressed. The eyelids winked convulsively, and shortly after she fell fast asleep. This may be considered as the first stage of the phenomena. The second was that of intense fear, or horror of being left alone, whenever Dr. Elliotson withdrew his hand from hers, or ceased to touch any part of her body. This feeling was on all occasions instantly arrested by simple

contact, even by the Doctor's foot being applied to hers. A series then of most interesting and extraordinary phenomena developed themselves. Being asked where she was, after some evasive answers she replied she was in Dr. Elliotson's drawing-room, and that he was present. The Doctor then applied the index finger of the right hand upon the organ of Veneration, and asked her several questions, to all of which she replied, with an expressive humility of feature and in a submissive tone of voice that were absolute studies. No artist has more skilfully depicted or actor imitated, so perfect an expression of this sentiment. But if this was wonderful, the extraordinary transition to proud disdain, and even to aristocratic hauteur, was astounding. She elevated her head, threw back her shoulders, rose slowly and majestically from her chair, and stood upright before the Doctor, on his placing his hand on the organ of Self-Esteem. He said, "Why do you rise from your seat? Do you think yourself an Empress?" "No," she replied, with a disdainful toss of the head, "but I think myself as good." The finger was rapidly passed to the organ of Veneration, and immediately the countenance relaxed, the body sank back in its seat, the proud expression of self-esteem lapsed away, and the humble and even servile attendant stood confessed. "Do you think yourself an Empress now?" said the Doctor. "O lauk! sir, what should make you think so? I an Empress!"—but the expression, the tone, the emphasis, were such as beggar description.

But another and a more painful proof of mesmeric influence was now to be elicited. The finger being applied to the organ of Conjugal Affection, the effect was truly such as, reflecting upon it, we shall not be surprised if the

narration raise a smile at our supposed credulity, incur the odium of misrepresentation, or be denounced as an attempt to minister to the love of the marvellous. It had rested only a few seconds on this organ, when a complete change came over her countenance, and deep and agonizing grief appeared to absorb her whole frame. The veins of her neck became distended; her features tumid and red. Large round tears coursed down her cheeks; her throat seemed choked with grief; she drew her breath convulsively, sighed, sobbed, and at length wept most piteously! Dr. Elliotson asked her, "What makes you cry?" "Oh, my poor, poor husband!" were all the words she could utter. This state of suffering was continued for several minutes, when the Doctor removed it to Self-Esteem, and then asked, "What makes you cry?" She replied, with disdain, "Me (I) cry; what should make me cry?" Suddenly the finger was placed on Combativeness—when she shewed all the signs of impatience, anger, and hatred, struck at Dr. Elliotson, stamped her feet, and, in short, exhibited the characteristics of a violent termagant. From this organ, the finger was removed again to Veneration, and she was asked what she saw in the room?—She replied, she saw nothing. The Doctor said, "Don't you see the pictures? There is one, of Noah's ark. What do you think of Noah, or the ark?" "It must have been a great man who made it," she replied—"He must indeed, Sir. A very great man! But I never read much about Noah." The finger was then placed on the organ of Wit—and the same questions being asked, she answered, "I never bothered myself much about Noah; and as to the ark, why, any tub that has a bottom will swim!" "But the maker of it was a very great man?"

said Dr. Elliotson. "I don't care whether he was great or small; I tell you I never bothered about him."

But the expression! Here it is that all language fails to convey an idea of these extraordinary phenomena.

On being asked to sing, and the finger applied to the organ of Tune as set down by phrenologists, she did not respond to the call; but on Captain Valiant pointing out another spot just on a level with, but a little anterior to the ears, she commenced, and sang very sweetly. Suddenly Dr. Elliotson removed the finger, at a part of the song where the line runs, "I hate the sight of a sheep or a cow," to the organ of Philo-progenitivness, or Love of Offspring, and then said, "What! don't you like the sight of the little lambs?" She instantly replied, "Oh, yes, poor dear little things, they are so innocent!" Then, removing it to Destructiveness, and putting the same question, she answered—"Like them! I should like to cut their heads off!" The finger was then placed on the organ of Wit, and she continued—"I'd cut their heads off, because they make such capital soup!" The organ of Memory was also excited by the finger, when she said, in a half whisper, "I'll tell you what we do when mistress goes out: Martha winds up the musical box, and this is the tune it plays." She then hummed a very pretty air.

Such are the phenomena which we witnessed; and so unexpected and so unparalleled were they, in comparison with anything we had ever seen, that we do not know how to impart to our readers the feelings of surprise, of awe, and wonder, which agitated our mind. Nor can we find any single word to convey the intense interest, the profound effect, the startling impression, which this case produced on all who were present, unless we employ the

scriptural word "miracle" as a synonyme for that which, in our present state of knowledge, seems analogous to an inversion of the law of nature. But those who know even but the outlines of Phrenology, will perceive in what we have related a beautiful and irrefragable proof of the truth of that conclusive science.

It must be admitted that the phenomena we have already related are sufficiently extraordinary; but they will appear as ordinary facts, when we add that this patient was never mesmerised phrenologically before the preceding Sunday (and the day we saw her was Saturday); had never heard of Phrenology; is an ignorant countrywoman; and was mesmerized by Captain Valiant, who had never until that day attempted the process. But the crowning fact, the extraordinary sequel, the culminating point to which all that we have said converges, is, that having had a tooth extracted by a clumsy dentist who fractured the jaw, from which she suffered great pain and uneasiness—to relieve this pain she was thrown into the mesmeric trance by Sir Thomas Wiltshire, and in that condition was operated upon by Dr. Charlton of Chatham. A portion of the splintered bone was removed, the rough edges of the teeth filed, the wound dressed, and the operation completed without her evincing the slightest feeling, or knowing what was done to her—nay, she could not be persuaded that the operation had been performed, till she perceived the taste of the styptic, which had been applied to staunch the blood!

Such is the outline of a case which strengthens the doctrines of Phrenology, establishes the power of Mesmerism, corroborates the operation of Jules Cloquet of Paris—who removed a cancerous mamma from a woman

while in the mesmeric state—and certifies to the truth of M. Lafontaine's assertion, that the boy Eugene had had a molar tooth extracted without knowing it, or experiencing pain, while under the spell of Mesmerism. Here then we arrive at the summit of English philosophy—the CUI BONO—the what is it good for? Here then we find pain alleviated, suffering avoided, and disease defeated by the curative aid of animal magnetism; and upon this point alone, setting aside all others, it, is an auxiliary to operative surgery only inferior to operative surgery itself.

Having then, rather at length, quoted cases which prove beyond the possibility of cavil the extreme force and exquisite acuteness of certain organs of the brain when in inordinate action, we at once dismiss this part of the subject, and offer one or two cases of that still more enhanced or ecstatic condition of the cerebral organs, which certainly existed in the girl Okey, and the Dutch Lieutenant. It has been called HELLESEHEN, CLAIRVOYANCE, LUCID-VISION, ECSTASY, or its completest state ALLGEMEINE KLARHEIT, when the ecstasy extends to all subjects of time and space; so that things long past, things occurring at a great distance, or things to come, are recounted, described, or predicted.

Of this condition of the cerebral organs, if we admit the testimony of Dr. Petetin, Baron de Strombeck, Dr. Joseph Frank, Dr. Bertrand, Baron Dupotet, and others, it is impossible to express excess of wonder, or to subdue a sentiment of awe. For, in the words of Dr. Johnson, employed on another occasion, it is the power of displaying the vast, illuminating the splendid, enforcing the awful, darkening the gloomy, and aggravating the

dreadful. It were pardonable, surely, if the ignorant portion of mankind worshipped a being endowed with such powers—with the faculty of foreseeing future events and recollecting past occurrences; and while cognisant of present existences, insensible or unmindful of surrounding stimuli—a being whose essence was an exquisite perception of the secret agencies, the mysterious laws, the occult influences, the undefined sympathies, the complicated causes, the unimagined energies and fearful destinies which create, uphold, preserve, direct, conduct, cherish, and surround us,—for such a being would be scarcely inferior to the Great God himself. But the lovers of the inexplicable, the marvellous, and the wonderful, the vast, the incredible, and the monstrous, must forgive that reasonable incredulity which bids mankind receive with caution the relations of ardent enthusiasm. What we wish to be, and anxiously desire, we readily believe, and as easily perceive. Fancy will depict portraits in the clouds, and buildings in the air; while imagination creates and peoples worlds, for memory to preserve. This is often the condition of enthusiasm, monomania, and insanity; and without charging the disciples of Mesmer with the misfortune of hallucination or the criminality of imposture, we cannot but hesitate before we receive some of their reports on CLAIRVOYANCE.

But before quoting these cases, and that we may not be accused of acting unfairly towards those authors, we subjoin a case from Dr. Abercrombie, which in a remarkable manner corroborates much that they have alleged of their clairvoyant patients. It is that of a girl, who, when seven years of age, attended cattle at a farmer's, and slept in the next room to an itine-

rant fiddler. This man appears to have deserved a better fate, as he played difficult and elaborate pieces, though much to the annoyance of the girl. Falling ill, she was removed, and became the servant of a lady, where some years after she exhibited symptoms of somnambulism. Generally, after being about two hours in bed, she would become restless, and begin to mutter; and after uttering sounds exactly similar to the tuning of a violin, would perform a prelude, and then dash off into exquisite pieces of music, giving correctly and clearly, and with the finest modulation, intonation to the air. At times she would stop, imitate the sound of re-tuning a violin, and then begin exactly where she left off. After a year or two she imitated a piano, which she was accustomed to hear in her present residence; and soon after she began to talk, and would descant fluently, acutely, pungently, and with astonishing mimicry and copious illustration, on political, religious, and other subjects. For several years, during these paroxysms, she was insensible to, or ignorant of all objects around her. But at sixteen she began to observe, and could tell the number of persons in the apartment, though the utmost care was taken to have the room darkened. When the eyelids were raised, and a candle applied to the pupils, they seemed insensible to light. As the affection progressed, she became capable of answering questions and noticing remarks made in her presence, and in both cases shewed great acuteness. Dr. Abercrombie says, "her observations, indeed, were often of such a nature, and corresponded so exactly with characters and events, that by the country people she was believed to be endowed with supernatural power." (ON THE INTELLECTUAL POWERS.)

This is certainly a most remarkable case; and the high reputation of Dr. Abercrombie renders it one of very strong corroborative evidence in favor of what has been told us by continental mesmerisers, among whom one of the most distinguished was Dr. Petetin.

This physician attended a cataleptic patient, who was perfectly insensible. He was unable to rouse her by calling loudly in her ears; but on finishing a sentence, and accidentally moving his face from her head towards the epigastrium, to his extreme surprise she heard him. After this he made many trials, and always with a similar result. He next varied his experiments, and discovered that she could taste, smell, and read, even through an opaque body, by the epigastrium. But at length, however incredible it may appear, the Doctor assures us that he could make her hear by speaking at one end of a conductor, while the other rested on the epigastrium. (MEM. SUR LA DECOUVERTE DES PHENOM. QUE PRESENT. LA CATALEP. ET LE SOMNAMB. Par M. Petetin, 1787.).

Richerand, noticing another case of Dr. Petetin, but more marvellous than the one just related, treats the whole as an invention, and says, "If we should be so unfortunate as to be reproached by the lovers of the marvellous with pushing scepticism too far, we must make answer, that M. Petetin is the sole witness of his miracle; that it is impossible from his relation to know when or on whom the prodigy took place; and, that this zealot of magnetism might have invented this story to confound the unbelievers who ventured to turn into ridicule his system on the electricity of the human body."

This is not legitimate criticism. The case is one which is difficult of belief; but still we are not justified in calling

it "an invention." It is quite possible—at least, this is the construction a generous adversary to Mesmerism should have put upon it—that Dr. Petetin was deceived by his patient, as Dr. Johnson was by the agents of the Cock Lane ghost. A physician, and that a man of eminence, should not therefore be accused of deception, when he may have been only the victim of imposture. But, as we said in a previous chapter, these reports do not rest solely on the credit of Dr. Petetin, but on the depositions of numerous other highly respectable and scientific gentlemen, whose object has been the extension of science, not the cumulation of wealth. Dr. Collyer, of Boston, in America, lately exhibited to a committee of the learned professions in that city, phenomena in a lad, which are not less wonderful than those related by Dr. Abercrombie of his somnambulist, or Dr. Petetin of his cataleptic. — The philosophic sceptic is therefore bound to reserve his judgment, till time shall have been allowed for a more careful analysis of evidence; and without venturing an opinion, on these extreme cases of mesmerism which we have certainly never witnessed, or we should not hesitate to express our belief in their truth or falsehood, we shall conclude with extracts bearing upon the question both from Baron Cuvier and Professor Dugald Stewart.

"We must confess," says Baron Cuvier, "that it is very difficult, in the experiments which have for their object the action which the nervous system of two different individuals can exercise one upon the other, to distinguish the effect of the imagination of the individual upon whom the experiment is tried, from the physical result produced by the person who acts for him. The effects, however, of

the agency, and upon individuals whom the operation itself has deprived of consciousness, and those which animals present, do not permit us to doubt that the proximity of two animated bodies, in certain positions, combined with certain movements, have a real effect, independently of all participation of the fancy. It appears also clearly, that these effects arise from some nervous communication, which is established between their nervous systems." (ANATOMIE COMPARE.)

Dugald Stewart says,—"Among all the phenomena, however, to which the subject of imitation has led our attention, none are perhaps so wonderful as those which have been recently brought to light, in consequence of the philosophical inquiries occasioned by the medical pretensions of Mesmer and his associates. That these pretensions involved much of ignorance or of imposture, or both, in their author, has I think been fully demonstrated in the very able Report of the French Academicians; but does it follow from this, that the facts witnessed and authenticated by those Academicians, should share in the disgrace incurred by the empirics who disguised or misrepresented them? For my own part, it appears to me that the general conclusions established by Mesmer's practice with respect to the physical effects of the principle of imagination, (more particularly in cases where they co-operated together,) are incomparably more curious than if he had actually demonstrated the existence of his boasted science; nor can I see any good reason why a physician, who admits the efficacy of the moral agents employed by Mesmer, should in the exercise of his profession scruple to copy whatever pro-

cesses are necessary for subjecting them to his command, any more than that he should hesitate in employing a new physical agent, such as electricity or galvanism."

Those who are desirous of entering more deeply into the subject, cannot do better than consult the very able work ON HUMAN PHYSIOLOGY, by Dr. Elliotson, so frequently alluded to in these pages, and to which we are greatly indebted for the contents of this chapter—a volume which, having once mastered, leaves little else to learn.*

* It will be perceived that in this chapter we have made no allusion whatever to those authors who have written expressly on Mesmerism; because we do not come forward as the apostle of Mesmerism, or the advocate of a science as yet in its infancy, but simply as the chronicler of phenomena which are everyday forcing themselves upon our notice. Neither do we desire any man to take our opinion for his guide, or our statements for facts. That reasonable incredulity which every man ought to encourage, and which we claim for ourself, we willingly concede to others. Our only object has been truth; and as at first we disbelieved that the mesmeric phenomena existed but in the imagination, or diseased organs of the mesmerised, so now we candidly admit our error, and subscribe to their truthfulness, which in other words, is only saying, "that we are wiser to-day than we were yesterday." All that is known of Mesmerism in England may be found in the works of Bell, Wilson, Townsend, and Colquhoun. To these writers, therefore, we refer the inquiring reader.

CHAPTER XIII.

SYSTEMS OF ORGANIZATION.—THE LINNÆAN AND NATURAL ORDER OF PLANTS.—SYSTEMS OF ZOOLOGY.—CUVIER'S.—DR. GRANT'S.—CARUS'S.—MACLEAY'S.—NERVOUS SYSTEM IN THE ACRITA, RADIATA, ETC. — PROPORTION OF THE BRAIN TO THE SIZE OF ANIMALS. — IN FISHES, BIRDS.—MAMMALIA.—IN MAN.—DESCRIPTION OF THE NERVES.—THE ULTIMATE PRINCIPLES OF THE BRAIN.—ROLANDO'S EXPERIMENTS.—FLEURENS'.—BOUILLAUD.

In our chapter on LIFE, borrowing freely from Richerand, we presented merely an outline of its phenomena, as developed in the extremes of the vegetable and animal kingdoms. We neither entered into systems, nor attempted to classify organization, but reserved what we had to offer on these important questions for this place. We shall, therefore, commence at once with an examination of the two systems which attempt to describe the various forms of vegetable life by certain characters, so that their aspects, habits, properties, qualities, and virtues, may be known and recognised at a glance; whether edible or medicinal; whether noxious or salutary; whether destructive, as in the deadly upas, and the ghastly manchineel; or nutritive and grateful, as in the wheat and melon; or whether adapted for architecture and shipbuilding, as in the majestic oak and time-defying teak; or whether, as in the PALM, the lofty monarch of the vegetable kingdom, aspiring to pierce the sky, it projects his ample limbs, unfolds his pinnate leaves, and collecting from heaven itself nectareous sweets, with the prodigal profusion of intertropical munificence pours the accumulated treasure into the lap of the fevered Indian thirsting

at his feet; or whether, exceeding all bounds of localization, it multiplies itself in the vast, antre-forming BANIAN, or in the tremendous BAOBAB, levies assimilative tribute from surrounding space!

It will naturally occur to the reflecting mind, that to form a system so complete, that it shall include and range in its proper order the exiguous moss and monstrous ceiba, must be a difficult, if not impossible task; but patience, labor, ingenuity, application, have done much to bring one at least of the two systems to a comparative state of perfection, because the characters by which it is asserted are founded in nature. This is what is called the Natural Order of Plants, and by it plants are divided into two great families, Cellulares and Vasculares, or those in which assimilation is carried on by cells, and those in which it is performed by regular vessels. The other is the Linnæan, or Sexual system, which is based on an assumed analogy between the reproductive organs of plants and those of animals. And it must be admitted that the latter is a convenient introduction to the study of botany—a science which, considering the relation the vegetable bears to the animal kingdom, may be declared the most important branch of the tree of knowledge. But it stops where useful inquiry begins: having conducted us to the door, it leaves us at the threshold. However, to make this chapter complete, we shall give a brief sketch of the two systems, leaving the reader to pursue the subject at his own convenience.

The system of Linnæus is composed of twenty-four classes, of which twenty-three are distinguished by the number, situation, proportion, or connexion of the stamina. The orders are founded on the peculiarities of the pistil, or some other equally obvious circumstance. Each order

is again divided into genera, and each genus into species and varieties. We cannot even make room for the names of the classes. In the natural order, Plants, considered with reference to their general structure, says Mr. Loudon, are separated into two grand divisions, called CELLULARES and VASCULARES. The Cellulares answer to the Linnæan Cryptogamia, and are also called Acotyledonous. The Vasculares answer to the rest of the Linnæan system. Cellular plants are formed entirely of cellular tissue, without woody fibre or spiral vessels. The lower tribes, such as Fungi and Algæ, are destitute of leaves, and in some points approach the animal kingdom so nearly as to be scarcely distinguishable. Ferns hold the intermediate station between Cellulares and Vasculares, and are chiefly retained among the former, on account of their perfect accordance in other respects. Vasculares are formed with cellular tissue, woody fibre, and spiral vessels, and their leaves are traversed by veins. They also bear perfect flowers, which will prevent their being confounded with the highest tribes of Cellulares. They are divided into two great classes, Monocotyledonous and Dicotyledonous plants. (ENCYCLOP. OF PLANTS.)

From this sketch it will be seen, that Linnæus did not arrange his plants in the order of their organization as developed in their assimilation, growth, and reproduction; it did not form the basis of his system, but a beautiful and ingenious theory was made to supersede the natural characters of vegetation. Some vegetables, indeed, those he called Cryptogamia, were entirely excluded from his arrangement. These were plants in which he could not discover the organs of reproduction; and they were therefore affixed to, not incorporated with his system, and present an irrefutable argument against the principle of

his classification. The natural order more correctly commences with the lowest form, or condition of assimilative organization, and traces the phenomena upwards, from the microscopic fungus to the stately cedar.

Of the natural order we shall merely say, that it is the only one which is worth the labor of acquisition; and consequently, notwithstanding its difficulty, should be the only one studied.

With respect to systems of life, as developed in animals, it was but very lately that any philosophical or scientific classification was attempted. Ancient writers, as Aristotle and Pliny, discoursed very lengthily of life, as presented in the outward forms and ordinary habits of animals; but as they adopted no natural classification, and were guided entirely by fancy or imagination, it frequently happened that it was impossible, from their descriptions, to distinguish one class from another, much less a variety of the same family. Hence, their histories were meagre descriptions, affording little amusement and less instruction. In this condition Linnæus found the science of Zoology, and resolved to reform it. Passionately attached to artificial systems, which teemed in his exuberant imagination, a partiality for which we have already seen so strikingly displayed in his SYSTEM OF PLANTS, he published, in 1773, his great work, in which he arranged all animals in six classes; namely, Mammalia, Aves, Amphibia, Pisces, Insecta, and Vermes. In the first class he placed man and the whale; in the second, the condor and the hummingbird; in the third, the frog and the turtle; in the fourth, the shark and the minnow; in the fifth, the beetle and the ant; in the sixth, the earth-worm and the polyp. This ingenious system, however useful in clearing the way, was not found convenient as our knowledge of animals

increased, nor did it sufficiently accord with those important discoveries which, from the period of the publication of the author's work, began to be made in Zoological science; and fifty years afterwards the Baron Cuvier, in his able MEMOIR ON WHITE-BLOODED ANIMALS, ably discussed the merits, and pointed out the defects of the system. This memoir was so well received, that three years after he published a classification of his own, which, with some few exceptions, has been adopted by all naturalists. In place of six classes, he finds but four in the animal kingdom; viz., Vertebrata, Mollusca, Articulata, and Radiata. For convenience, we print them thus:

FIRST FORM—(VERTEBRATA.)

CLASSES.	EXAMPLES.
1. Mammalia	Man, Whale.
2. Aves	Eagle, Duck.
3. Reptilia	Tortoise, Frog, Serpent.
4. Pisces	Salmon, Eel.

SECOND FORM—(MOLLUSCA.)

CLASSES.	EXAMPLES.
1. Cephalopoda	Nautilus, Sepia.
2. Pteropoda	Clio.
3. Gasteropoda	Snail, Limpet.
4. Acephala	Oyster.
5. Brachiopoda	Lingula.
6. Cirrhopoda	Barnacle.

THIRD FORM—(ARTICULATA.)

CLASSES.	EXAMPLES.
1. Annelida	Leech, Earth-worm.
2. Crustacea	Lobster, Crab.
3. Arachnida	Spider.
4. Insecta	Bee, Beetle.

FOURTH FORM—(RADIATA, OR ZOOPHYTA.)

CLASSES.	EXAMPLES.
1. Echinodermata	Star-fish.
2. Intestinalia	Tape-worm.
3. Acalepha	Actinia.
4. Polypi	Sponge, Coral.
5. Infusoria	Monas.

Such, then, is the system of Cuvier. But it has been somewhat modified by Dr. Grant, who retains the primary divisions, but alters or amends the number, the position, and many of the names of the classes. This modification has been considered ingenious, but its complexity and involution render it impossible, without very great labor, to reduce it to a form that should at once present a popular view and a fair exposition of the leading principles, which have directed the Doctor in his minute investigations. Fearful, therefore, of mutilating what we cannot confine within due limits, we are reduced to the alternative of referring the inquisitive reader to the author himself.*

This much, we may add—that it is formed on the system of Virey, a French naturalist, who first adopted the nervous system as the basis of his classification. For example, Dr. Grant's first division is called spinocerebrata, or animals which have a spinal cord and a brain; his second, cyclo-gangliata, answering to the mollúsca of Cuvier, in which there is neither spinal cord, nor brain distinctly seen; but in which the phenomena of life are carried on by ganglia, or knots of nerves. These examples will be sufficient to shew, that Dr. Grant's system is not fitted for a popular treatise. Other natu-

* Since this chapter was written, we have read with much pleasure and edification the excellent Lectures of Professor Owen, lately delivered at the College of Surgeons. Had they appeared a little sooner, this chapter would have been more worthy the reader's attention, as we should have availed ourself of the Professor's elaborate prelections. However, as we have not anticipated the reader, he has a pleasure to come, in the perusal of the Professor's Lectures, which we assure him cannot be overrated.

ralists have also adopted the nervous system as the basis of their classifications, among whom is Cuvier himself; and Carus, who arranges animals in circular groups; and Macleay, who thinks he has discovered a principle in nature by which natural groups, whether families or subdivisions, have a tendency to return into themselves. This principle he expresses by circles, each circle being composed precisely of five groups, and the large groups connected together by lesser groups, designated "osculant." As there is novelty combined with ingenuity in the system, though we cannot avoid thinking with an ingenious writer, that imagination prevails in it to a certain extent over sober observation, we present a diagram of its primary divisions, which may not unaptly be denominated a philosophical fancy sketch.

Carus supposes that all animals may be arranged in three grand circles:

In the first, he includes Oozoaires, or Animal Eggs.

In the second circle, Corpozoaires, or Animal Trunks; and this comprehends, first, the Gastrozoaires, or Animal Abdomens; and second, the Thoracozoaires, or Animal Chests.

In the third circle he places his Cephalozoaires, or Animal Heads; and this embraces four divisions. First, the Aedoio-Cephalozoaires, or Fishes; second, Cephalo-gastrozoaires, or Reptiles; third, Cephalo-thoracozoaires, or Birds; and fourth, Cephalo-Cephalozoaires, or Mammiferous Animals.

We are afraid that these very long words, however applicable in a scientific work, are sadly misplaced here; but they will amuse by their sound, if they do not instruct by their sense. We are not, however, done with classification, for we have to mention Lamarck's system, which arranges animal life in three grand divisions. The first, is the Apathic or Automatic; the second, the Sensitive; and the third, the Intelligent. This is simple and natural, and approaches to a phrenological system.

These are the various systems or classifications of animals, due examination of which will prove that the task of arrangement required great labor, some genius, much industry, and infinite comparison; and yet, notwithstanding all that has been done, so far as the great mass of mankind is concerned, the book of Animated Nature is still a sealed volume!

It is not necessary, to the end we have in view, to detain the reader with any structural description of animals, because our business at present is not with

anatomy, but physiology, and consequently, the nervous system of animals, being that to which the phenomena of sleep are justly referred, must form the subject of our inquiry. We shall therefore proceed to offer some remarks upon the cerebral, spinal, and ganglionic systems, adopting as that with which we are most conversant the nomenclature of Cuvier, and occasionally that of Dr. Grant.

Beginning at the very lowest group of animated beings, the Acrita of Macleay, we find, that the nervous system consists of nervous globules, or molecules, diffused through the cellular gelatinous tissue of which these animals are composed. Many of them appear as mere points, others are of great size, homogeneous throughout, and sensible to touch, light, and caloric. In the Radiata, or radiating animals, the nervous globules take a linear form, and constitute themselves thin filaments, or nerves, generally proceeding from a central point, and diverging from it in rays. This central point is a ganglion; and there are generally more than one developing and connecting themselves together by nervous threads. They are situated at equal distances; and the form, organization, or shape of the animal, determines their number and arrangement. For example, in the Asterias, or Star-fish, with five rays, there are five ganglia, uniting themselves by nervous filaments, in the form of a circle. In the next group, the Mollusca, we find the nervous system not only rising in importance, but from the Tunicata, or Naked Acephalous Mollusca of Cuvier, through the Conchifera, and Pteropoda, augmenting in complexity and accumulating in results, till it arrives at Cephalopoda, in which it is most prominently developed. The Articulata, or

articulated animals, are distinguished by their circular structure, the number of circles being definite, and each segment of the circle a repetition of the other. Of these segments, that which is positively anterior acquires the greatest development, and constitutes the head. Ganglia arranged in series, and connected by longitudinal nervous internodes, here compose the nervous system; while two semicircular nerves, and a ganglion, form the neural circle. In the different genera, the circles, with one exception, are open, and vary in development; and in the cephalic segment, the rudiment of a brain is manifested by the formation of a supra-œsophageal ganglion. In the Insecta, or Insect tribe, the most elevated divisions of the class, we discover that the nervous, or neural system, has acquired a very high degree of organization, and assumed an important form of development, until it astonishes in the mason wasp, and confounds in the common bee, leaving the question almost a matter of doubt, whether the busy little animal last mentioned reasons, or is only the creature of instinct.

Here, the neural powers consist, first of a ganglionic cord, running along the abdominal surface of the insect, similar to that in most of the antecedent classes. Secondly, of a nervous ring, or neural collar, surrounding the œsophagus. Thirdly, of a brain immediately above the œsophagus, or as it is called by physiologists, a supra-œsophageal mass, in some species greatly developed, and giving off, or receiving into its substance, eight pairs of nerves, and two single ones. Fourthly, a tract progressing along the dorsal surface of the cord, and transmitting lateral neural branches; and fifthly, something like a punctum saliens, a primordium or beginning of the par-

vagum and respiratory nerves, has been thought to be discovered. These organs are not found in all the genera and species of insects, and may possibly have been gratuitously awarded to those in which they are said to exist, by hasty and intemperate observers. An increase of development of the neural powers, however, we easily trace, from the Hemiptera through the Orthoptera, and Coleoptera to the Hymenoptera, in which, of all the insect family, the nervous system is most fruitful of results, most abundant in phenomena, and most involved in complexity.

This development of the nervous system in insect life, so interesting and engrossing, has been accurately and happily observed by Dr. Herold, who has enriched entomology by his labors, and illuminated physiology by his writings.

This author traced with commendable patience, and recorded with painful fidelity, the graduated changes which take place in the common butterfly, from the time it acquires its natural size, to its assumption of the imago. These mutations consist principally in the progressive curtailment of the neural internodes, and consequent propinquation of the ganglia; in the disappearance of some of the nerves, in the incorporation of two or more ganglia; in the conjunction of the primary ganglion with the encephalon; in the union of two ganglia at the expense of one or two others; and, lastly, in the lobes of the brain; which, forming an angle with each other, become horizontal. These changes are necessary to the new state into which the insect is about to immerge. It is a condition of its being—a property of its existence,—a phenomenon of this form of life, indispensable to the new

modification of its organs, and the arrangements of its members, as the wings of a bird for flight, or the legs of a quadruped for locomotion.

At first sight, it would appear that "there is apparently a broad line of demarcation between the nervous system of the highest intervertebrated, and that of the lowest vertebrated tribes; still it is only a higher development, and a somewhat higher arrangement of parts essentially the same. In many of the intervertebrata we find nerves, ganglia, nervous internodes, and rudiments of the brain. In the vertebrata all these parts exist. The nervous internodes are made continually, by the displacement of the ganglia to the sides; and the columns of nervous matter thus formed constitute, by their enlargement, a spinal cord; the nervous collar that encircles the œsophagus, and stretches to the brain, is by increase of size converted into the medulla oblongata, or top of the spinal cord; and the brain, which is extremely rudimental, becomes massy and complicated, yet not equally developed in all the classes. It is least developed in fishes, more so in reptiles, still more in birds, and attains still higher degrees of complication in mammiferous animals. All naturalists admit that fishes rank lowest in the scale of vertebrated animals; that reptiles are somewhat more elevated, or display instinct of a higher character; that the instincts of birds are of a loftier kind than those of reptiles; and that mammiferous animals approach many of them in sagacity to human reason itself." (PHIL. OF PHREN.)

The nervous system in fishes varies very considerably as to form and volume, the distinguishing characteristic being excessive prolongation of the spinal cord, and pro-

portional diminution of the encephalon. Their brains are extremely small, and occupy but a part of the cranial hollow. Their positive size, and proportion to the magnitude of the body, vary in various species; but in all, the general rule is, without an exception, that, whether absolute or relative, the brain is in a minimum condition. In Reptilia, which includes the Amphibia, and true Reptiles of modern naturalists—the Amphibia corresponding with the Batrachian, or Frog-like animals of the Baron Cuvier; and the true Reptiles, which again include the Ophidian or Serpent kinds, the Saurian, or Lizard tribes, and the Chelonian or Turtle families—we find the brain, though small, occupying the entire interior superfices of the cranium, and constituting the sensorium. It is more developed relatively to the spinal cord, and absolutely in itself, than in fishes; and the cerebral lobes are larger relatively than other parts of the brain. The posterior portion, or cerebellum, is extremely small, and varies somewhat in form in different genera. It is a thin, transparent band in the frog; in the lizard and the viper we still perceive this band, but it is thicker and opaque; and in the turtle it is linguiform, and is distinguished by those minute lateral appendages which are also detected in the crocodile. (SWAN.) In Aves, or birds, the superior development of the nervous system is seen, in the greater proportion the brain bears to the weight of the whole body; in its greater weight over the spinal cord; in the altered relative position of the parts contained within the cranium, and in the complication of those parts. Carus found the brain of a pigeon to weigh 37 grains, whose whole weight was 3360 grains; or in the proportion of one to ninety-one. In

small birds the proportion is even as much as one to twenty, or twenty-five. In a word, the neural organs in this class exhibit a more exalted development of life.

"The brain in birds fills completely the cranial cavity, so that the skull is a measure of the size, and indicates accurately the configuration of the parts within. These parts consist of the cerebral hemispheres, the optic lobes, and the cerebellum, as in fishes; but the relative size of these parts is now greatly changed, the cerebral mass being not only relatively much longer than in the inferior classes, but, the cerebral placed also more above the others—an approximation of the things as existing in man." (PHIL. OF PHRENOLOGY.) This form of the cerebrum differs, however, in different birds. Mr. Anderson found it in the sea-gull and snipe, oblong and largest posteriorly; in the hawk more round and short; in the goldfinch and pigeon more elongated backwards, and covering the optic lobes. (MEDICAL GAZETTE.) These latter are small, and more widely separated, than in fishes and reptiles. They present the same form in all birds, and are hollow; but the parietes of the cavities are thicker, and altogether more solid than in the lower classes, and the cerebellum has attained a very high degree of development.

We have arrived, at length, at the Mammalia. We have traced organization, as developed in the nervous system, from the lowest scale up to the highest grade, and have in some measure discovered the animal functions by discoursing of their organs, those especially which rule over sensation and the exertion of volition. It remains now but to append an outline of the differences in organization, form, and arrangement, which in a marked

manner distinguish this class of animals from birds, reptiles, fishes, and mollusca; and then we shall add an abridgment of the very curious but cruel experiments made on the nervous system by the French physiologists.

"The most striking peculiarity of nervous constitution in the Mammalia, is the great predominance of the BRAIN over the other divisions of the central axis of the nervous system, arising chiefly from a great development of the cerebrum and cerebellum. The cerebellum, in mammiferous animals, has obtained a very great development. It not only consists in all of a median and two lateral lobes, but the lateral lobes, in the greatest number of these animals, constitutes the largest portion of the mass. In all, it is more or less furrowed externally; but the number, the length and depth of these furrows vary in different animals, and correspond with the status of the animal in the scale of existence. The lower the animal in the scale, the cerebellum is the smoother; and, as the animal rises in the scale, the furrows become more numerous, longer, and penetrate deeper into the substance of the organ. In the bat, the cerebellum is nearly smooth, and the lateral appendages very small. In the horse, the lateral appendages are deeply furrowed and lobulated; and in the ape it has a most striking resemblance to the same part in man. The high development of the cerebellum is farther displayed by the existence of the arbor vitæ, and fourth ventricle—a chamber, or cell, which is formed by the divergence of the corpora restiformia, and which is open in the inferior classes of animals, but covered over in mammiferous animals, by the development of the cerebellum.

"The cerebrum, or brain proper, in mammiferous animals,

is more highly developed than any other division of the nervous system; yet it is not developed by the same degree in all animals of this class. In some it is small, smooth, or unconvoluted and rudimentary, as in the ornithorynchus and marsupial animals; in others it is large, and the convolutions upon its surface strongly marked. In some, the cerebrum is so small that it reaches only as far back as the optic lobes. In others it projects so as to cover these bodies; and in others, it extends backwards still farther, so as to cover the cerebellum in part, or wholly. In the bat the tubercula quadrigemina are quite exposed. In the sheep the tubercula quadrigemina are covered; but the cerebrum extends no farther than the anterior margin of the cerebellum. In the horse, from the great development of the cerebrum backwards, the cerebellum itself is in part covered. In the monkey the cerebellum is completely covered by the cerebrum; and in man the cerebrum is developed so far in the same direction, as not only to cover the cerebellum, but to project often an inch beyond it altogether. In man and the ape tribes, then, the cerebellum is situated entirely under the posterior part of the cerebrum. This latter is not only found in various degrees of development, but its form is different in different mammiferous animals. It is well known that the brains of carnivorous animals are widest betwixt the ears, and in graminivorous animals that part is the narrowest. In the bat the length and breadth of the cerebrum are equal. In the rat and mouse the form is oblong ovate, and much narrowed anteriorly. In the sheep and deer more oval. In the horse the form is oblong square, the angles rounded off anteriorly and posteriorly, and the anterior lobes large. Indeed, in every genus of animals

there is a peculiarity of form; and even in animals of the same genus and species there are shades of difference that the critical eye can easily discover. Here, then, we have varieties ad infinitum of cerebral organization and state; varieties in development, even in the number of the parts themselves; varieties in the size of these parts; and varieties in the form, both of the smaller subdivisions of the brain, and of the whole cerebral mass." (PHIL. OF PHREN.)

We have extended this portion of the subject to a length we did not at first contemplate; but the vast collection of facts brought under notice must be interesting even to the most indifferent reader, as it includes almost the whole outline of the radius of the circle of the neural anatomy of the Mammalia. And we think we may draw the conclusion from what we had previously advanced, and from the extracts we have given, that, as the brain, or rather the cerebrum, increases in volume, and the reasoning powers oppose themselves, sleep seems to be more requisite to restore the exhausted equilibrium of life, as manifested in the development of the neural principle, whether that principle be a fluid, as supposed by Majendie; or like electricity and galvanism, possessing none of the sensible properties of matter, as hinted by Dr. Macartney; while it would seem, at the same time, to be less under the will, and more liable to irregular manifestations of cerebral activity, or cerebral inertness, developing itself in sleeplessness or mania, or assuming the form of somnolence or coma, than in those beings whose organization is less complicated, and whose sense of the relation of external objects extends only to the impulses of instinct.

Portions of the substance of the brain may be removed, without producing instant death; and, as will be seen, a

Section of the median nerve of the arm magnified. The divided ends of the fibrils are seen with the covering of every bundle, and of the whole. The single spot represents a blood-vessel. M. Raspail.

Section of a ganglion of the sympathetic nerve magnified. The nervous trunks are only half enclosed in each other, but all in a common covering. The dark spots represent blood vessels. M. Raspail.

loss of substance did not, so far as our observation extended, involve either a loss of mental or muscular power, or any faculty with which we are acquainted. This statement, however, must be taken, with certain modifications, as the singular experiments to be mentioned thereafter will prove. But, before we proceed to these, we must express our regret that we cannot possibly find room for the masterly resumé of Gall's anatomy of the brain, as given by Dr. Elliotson in his HUMAN PHYSIOLOGY.

We extract, however, the Doctor's definition of a nerve, illustrated by figures from M. Raspail, as the nature of the nerves is very probably new to many of our readers. Nerves, says Dr. Elliotson, are collections of white filaments, contained in delicate membranes, and united into fibres like those of the brain, and are invested with another membrane, called neurilema, which again is enclosed in a firm white membrane. M. Raspail has lately examined them, and finds them to be aggregations of solid cylinders, each invested, like muscular fibres, with a fine membrane, and the whole with a common covering, to form a trunk.* He declares, that no tube exists in them, as many have asserted. A thin, transverse section of a branch of a ganglionic nerve exhibits a single chord; but a similar section of the median of the arm exhibits several, every chord having its membrane, as well as the whole one in common; and their number is greater, the further from the head the examination is made. A longitudinal view presented the filaments, with a granulated

* Professor Ehrenberg, in refutation of M. Raspail, asserts, that the fibres of the encephalon, spinal chord, and nerves, are tubular! His discovery was microscopic, and we are inclined to support it.

appearance, like the orifices of tubes; but this was probably the effect of the refraction of light, and it occurred when other textures were examined in the same way. Each cylinder of a human nerve is said by M. Raspail to be about 00.787 of an inch in diameter. * * *

Though the fibres are parallel, their filaments continually unite, so that a nerve appears more or less reticular.

A plexus is the same arrangement on a large scale. Ganglions consist, like the encephalon and spinal chord, and the swellings of the nerves of sense, called also ganglia, of white fibrous substance, and of a pulpy greyish, reddish, or whitish substance, in which this is plunged, and from which it is easily distinguished. The white filaments anastomose and interlace or mingle most freely, and membranes exist similar to those of nerves within them and without. M. Raspail represents a ganglion like the median nerve, only that the separate portions half enclose each other. (HUM. PHYSIOL.)

We must not forget, that every portion of the nervous system throughout the body is directly connected with others, and indirectly connected with all the rest, just as is every blood-vessel with regard to its system.

"Nerves subdivide, and soften, till they are lost, with the exception of the optic, which expands into a membrane called retina, and of the coalition of nerves. The diameters of branches are said usually to exceed that of a trunk. * * * Gall has shewn, that the nerves and spinal chord do not arise from the brain, but only communicate with it; nor the spinal nerves, from the spinal chord; for, when the brain is absent, the fœtus may equally possess spinal nerves; and the brain and spinal chord, and the brain and encephalic nerves, are in no

Section of a ganglionic nerve magnified, according to M. Raspail.

Longitudinal view of the fibrils of a nerve magnified. M. Raspail.

proportion to each other in the various species of the animal kingdom, nor the spinal nerves to the spinal chord.

"The idea of the nerves proceeding from the brain, is as unfounded, as that of the arteries proceeding from the heart, or one portion of an extremity from another. Fœtuses are seen with an arterial system, and no heart; others, born without arms, but fingers at the shoulders. Independently of contrary arguments, we may demand proofs of the opinion; none are given; and it has, no doubt, been derived from the shooting of vegetables."—(IDEM.)

The average weight of an adult brain, says the same authority, between the ages of twenty and sixty, varies from forty to fifty ounces; the spinal chord, about one ounce and a half; and the nerves, could they be collected to their minutest ramifications, would weigh several ounces. On referring to Dr. Sims's paper, in the 19th volume of THE TRANS. OF THE ROY. MED. CHIRURG. soc. we find the weight of the brain estimated at from forty-four to forty-six ounces. The Wenzels, who made numerous experiments on the brain, say that it does not increase, as we have elsewhere noticed, after seven years of age. Does it gain in density, then, without increasing in volume? We have not seen this noticed by any physiologist, though it is possible that this has been the case; for Dr. Bellingeri says, that the pulpy matter in childhood far exceeds the fibrous; which latter, bulk for bulk, is denser, firmer, and of course heavier.

But this estimate must be considered as the sum of the weight of the gross material of the organs wherewith the phenomena of life are manifested; for Dr. Macartney says, that "it is, perhaps, not assuming too much, to

suppose that the whole nervous system, if sufficiently expanded, would be found too tender to give any resistance to the touch, too transparent to be seen, and would, probably, escape the cognizance of all our senses !"

The ultimate principles of the brain, so far as chemistry enabled Vanquelin to determine, consist of water, albumen, white fatty matter, red matter, osmazome (peculiar to the brain), phosphorus, muriate of soda, and phosphates of lime, potass, and magnesia, with sulphur. M. Couerbe discovered a large quantity of cholesterine in the brain; and asserts, that in the brain of sound persons, as much as two, or two and a half per cent. of phosphorus exists, but about half as much in the brain of idiots, and nearly double in the brain of maniacs! (HUM. PHYSIOL.)

Experiments performed on living animals, with a view to determine those parts of the encephalon which exercise specific functions in the animal economy, are not always conclusive, as, independent of the shock given to the system by the division of the skull, it is perhaps impossible for the operator to avoid wounding some other organ than that which he seeks to remove. This may account we think in a great measure, for the different results observed by the French vivisectors, but not entirely. For example, Fontana says he removed the brain of a turtle, and that it lived six months after, and walked as before. M. Rolando repeated this experiment; but the animal died as soon as a cut was made behind the cerebellum. We are at a loss to express our opinion on these experiments. Our experience induces us to think that both Fontana and Rolando have been mistaken in their experiments. We have seen many hundred turtles

killed, and in no case did any one of them die "as soon as a cut was made in the cerebellum." The method of killing them in the West Indies is by decapitation; and as often as we have seen this operation performed, we never saw the turtle die immediately, but quite the reverse; for the intestines remained a long time sensible to punctures, or touch, even when removed from the body; and as to the heart and muscles, we have seen them sensible to stimuli several hours after being cut up and prepared by the cook! In short, this fact is so well known to the negro-butchers in Jamaica, that they gravely tell you, that "if a turtle be not killed before the sun rises, he won't die until the sun sets." And with reference to a turtle's living six months after having the entire skull emptied, it is possible that Fontana only fancied he had removed the entire brain. The head of some species of turtle is very difficult to get at, especially the land-turtle of Jamaica, for it has the power of retracting the head and neck in a sheath, and keeping it there; and the only means by which it can be made to protrude it, is by applying fire to the tail; when the animal immediately extrudes his head, and the cook decapitates him. In this case we imagine it dies like the fowl, as will be seen, from loss of blood. M. Rolando "made innumerable experiments upon goats, lambs, pigs, deer, dogs, cats, and guinea-pigs, to ascertain the results of lesion of the tubercles, and parts near the optic thalami, but rarely obtained the same results." The same physiologist says that lesion of the thalami optici causes convulsions; while Fleurens denies it. M. Rolando says that he found an unsteadiness, like that of intoxication, follow the removal of two-thirds of the lobes

of a chicken. Fleurens, on the contrary, says he must have wounded the cerebellum. Again: Fleurens thinks that muscular action depends upon the cerebellum; yet Majendie found that animals performed regular motion after losing it. Such is the uncertainty attending these vivisections, and so various the results, that one fact is no sooner supposed to be established, than it is proved to have emanated in error, to be propagated in misconception, or founded in delusion. Majendie says, that the removal, or wounds to a certain depth, in the chorda oblongata, give animals of the higher orders a tendency to move backwards. He also found that they performed very regular movements after the removal of the cerebellum; and that, if the fourth ventricle is exposed, the cerebellum removed, and a perpendicular incision made into the chorda oblongata, on one side of the median line, near the outside of the interior pyramid of a rabbit, the animal will turn to the right, if made on the right side; and to the left, if made on the left.

Some of M. Fleurens' experiments, undertaken to prove that "the cerebral lobes are the exclusive seat of the sensations, perceptions, and volitions," are curious. We quote from the report. He began by removing the two cerebral lobes of a chicken; yet, it lived for "ten months in a state of perfect health;" during which period, from careful observation, he obtained the following results: "He had scarcely removed the brain, when the sight of both eyes was suddenly lost; the hearing was also gone; and the animal did not evince the slightest sign of volition, but kept himself perfectly upright upon his legs, and walked when he was irritated, or when he was pushed; when thrown into the air, he

flew; and swallowed water when it was poured into his beak. He never moved unless he was irritated; when placed upon his feet, he remained upon them; when seated on his belly, in the manner that chickens do when they sleep, he remained in that position; he appeared plunged in a sort of drowsiness, which neither sound nor light in the slightest degree disturbed; nothing but direct irritation, such as pinching, or pricking, or striking, had any effect. When the animal did move about, it seemed to do so without any motive or object; though there were no convulsions, nor any want of harmony in its movements; if it met with any obstruction, it did not know how to avoid it. It was quite healthy; and, five months after the operation, the wound had quite healed, and a new layer of bony matter was forming. Still, it had no sense of smell or taste; neither had it any sensation of hunger or thirst; for after allowing it to fast for three whole days, and then placing food immediately under its nostrils, and afterwards putting it into its beak, and also putting its beak into water, it did not shew the slightest disposition either to eat or drink, and would have died for want of nourishment, if it had not been fed by force. It seemed entirely to have lost its memory, for if it struck itself against any body, it would not avoid it, but repeat the blow immediately."

Bouillaud advanced some opinions in direct opposition to the experiments of Fleurens; but we can do no more than allude to them. Information on this, and on other questions concerning the functions of the cerebral organs, may be obtained, by consulting the works of Majendie, Richerand; Brachet, Dr. Elliotson, and numerous other physiologists. We have, perhaps, already wearied the

reader who takes up a volume for amusement, and disappointed the student who reads for instruction; or we have exhausted curiosity by generalization, and disheartened inquiry by exposing difficulty. What was commenced as an outline, has swollen into a volume; and what was intended as a catalogue of the objects contained in the cabinet, has assumed a descriptive form, and pretended to elucidate that, of which perhaps it may be said with justice, the author knows little, or at least perceives that little only through "the spectacles of books." It is nevertheless no easy task to disentangle confusion and reconcile conflicting testimony; to collect fact and collate observation—and when the task has been performed, and the materials accumulated, to discharge what is superfluous, arrange what is necessary, and preserve what we know to be true, or believe to be supported by inassailable authority. If, therefore, the deductions which we have drawn appear not to be consonant with the premises laid down, or not established by the examples adduced, our apology must be, the insufficiency of time necessary for the acquisition, the difficulty of condensation attending the abridgment, and the labor of thought inseparable from the nature of a science, which involves the minutiæ of anatomy, comprehends the principles of therapeutics, and embraces the metaphysics of physiology.

We conclude this chapter, therefore, and proceed to the next for a summary of the opinions which have been entertained of the seat of the mind, together with proofs afforded by pathological observation, that it is seated in the brain, and that the organs of that viscus are as various in their functions, as they are varied in their form.

EXPLANATION OF THE PLATES.

Fig. 1. Lateral view of the brain, showing the convolutions. The exterior double lines represent the skull. The striated mass on which the convolutions appear to rest, is the cerebellum. The projecting lines to the right represent the nasal outline.

Fig. 2, represents the base of the brain. B, is the right side. I, the cerebellum; *c c*, which is scarcely perceptible, is the corpus restiforme, or primitive band of the cerebellum, plunging between the facial nerve 11, and the acoustic nerve 9. *a*, is the olivary ganglion, which is prolonged to *b*, the transverse fibres of the cerebellum. One part of these transverse fibres is removed to show the pyramidal band *c*, *c*, *q*, *i*, *v*, the optic nerve. *w*, *w*, *w*, inferior convolutions of the middle lobe 26, 27. A, is the left base. A vertical section of the cerebellum directed through the entrance of its original bundle *c c*, and through the middle of its ganglion. S, in the direction 92, 28, B, to show the reinforcement of the original bundle in the ganglion, and the ramifications and subdivisions of the nervous chords. All the transverse fibres of the cerebellum which cover the trigeminus K, *i*, and the prolongation *f*, of the pyramidal bundle 1, *c*, *c*, are removed. The prolongation of the olivary ganglions *a a*, is still covered by the transverse fibres. The optic nerve is removed from the great fibrous bundle *g*, and cut at *v*, *q*. The pyramidal bundle is seen prolonged from the decussation 1, to the transverse interlacement 35, below the optic nerves. The grey mass 17 has been removed by scraping, to show the two chords of the mammillary bodies 16, 16; the one *y* towards the transverse interlacement 35, the other *y* towards the common mass of communication, or fornix. The nervous fibres which spread out in the convolutions of the middle lobe, and contribute to its functions, are cut at *h*, *h*, *h*, between 38 and 37, on a level with the anterior commissure; and the middle lobe is entirely removed. The mass of grey substance of the great superior ganglion of the brain, and a part of the convolutions situate below the great fissure, between the middle and anterior lobes, are cut in the same direction. We thus see how this great mass is divided by the nervous bundles S, into an inner part *l*, and an outer part L, S; how the finest fibres are implanted in the grey substance; how the convolutions 40, and 41, are formed by the posterior chords of the great fibrous bundle or crus placed before *g*, and what are the depth and length of the great fissure 39, 39, between the anterior and middle lobes. By the removal of the middle lobe, the posterior edge of the great cerebral cavity N N becomes visible. This cavity is prolonged inwards and forwards below the great fibrous bundle or crus *g*. Between 40 and vij, are seen the convolutions situated above the fissura Sylvii between the anterior and middle lobes. The anterior lobe is but slightly cut. 21, Internal root of the olfactory nerve. 18, Its external root. 23, Its bulb. 25, 26, Anterior lobe of the cerebrum. 27, Its middle lobe. 28, Its posterior lobe. 20, Optic nerve. 32, Decussation of the optic nerves. *v*, Optic nerve after its decussation. 33, Transverse interlacement of the upper edge of the great commissure of the cerebellum. 34, 34, Transverse interlacement of the nervous bundles of the middle lobe. 37, Transverse interlacement of the great superior cerebral ganglion. 38, 38, 38, 38, Situation of the tissue of the two orders of nervous filaments. 13, Pathetic nerve. *b*, *b*, Pons Varolii. 91, Central fissure of the posterior part of the spinal chord. 61, Anterior commissure of the cerebrum.—(GALL.)

Fig. 1.

Fig. 2.

CHAPTER XIV.

MENTAL PHENOMENA. — DOUBTS FORMERLY EXISTING AS TO THE SEAT OF THE MIND. — OPINIONS OF VAN HELMONT. — DRELINCOURT. — ARISTOTLE.—DESCARTES.—BUFFON. — GALL. — HIPPOCRATES. — ACCIDENTS OF THE BRAIN PRODUCE ABNORMAL ACTION OF THE REASONING FACULTIES. — CASES FROM RICHERAND, SIR ASTLEY COOPER, DR. CONOLLY, DR. GREGORY, DR. BEATTIE, AND DR. ABERCROMBIE.—REMARKABLE CASE OF A SAILOR.—DR. BRIGHAM'S CASE OF FORGETFULNESS OF PLACES.—ANOTHER OF LETTERS. — SINGULAR NARRATIVE OF AN AMERICAN CLERGYMAN.—PROGRESS OF THE BRAIN FROM INFANCY TO MANHOOD.—ANIMALS CAN EXIST WITHOUT THE BRAIN.—MR. LAWRENCE'S, M. LALLEMAND'S, AND M. OLIVIER'S CASES OF ACEPHALOUS INFANTS.—PORTIONS OF THE BRAIN REMOVABLE. — TWO CASES BY THE AUTHOR. — DR. ELLIOTSON'S REMARKS ON ACEPHALOID CHILDREN. — M. DESMOULIN AND MAJENDIE. — DUVERNAY REMOVED THE CEREBELLUM OF A PIGEON. — ALL EXPERIMENTS ON THE NERVOUS SYSTEM LIABLE TO ERROR.—THE ORGAN OF THEOSOPHY PLACED IN THE BRAIN.—THE FACULTY OF SLEEP NOT SEATED IN THE BRAIN.

LIVING in an age so enlightened, and still progressing in knowledge, it will appear incredible no doubt to the general reader, when he is informed that great diversity of opinion has been entertained as to the seat of the Mind. But it is nevertheless true. For though Aristotle had long before remarked, "that those who have a large head are sagacious—are like dogs; those who have a small head are stupid—are like asses; those who have a conical head have no shame—are like birds with carved claws," (DE PHYSIOGNOMIA.) yet, there have been subsequent to him learned men, and many of them ranking in the first order of the

intellect of their day, who could imagine it situated in other parts of the body rather than the brain;—for Van Helmont placed it in the stomach; Drelincourt in the cerebellum; Aristotle himself in the heart; Descartes in the pineal gland; and Buffon in the diaphragm. These were philosophical dreams, the offspring of conjecture, unsupported by any evidence, and contradicted by natural testimony.

It is to the immortal Gall we owe the present comprehensive views of cerebral phenomena; for, previous to the publication of his great work on the Brain, the doctrines taught in the schools of medicine relative to the mind were vague and unsatisfactory, irreconcileable with fact, and inconclusive, from the uncertain nature of the data upon which they were founded. Buffon seems to have been nearer the truth than any other speculative philosopher, with the exception of Hippocrates, whose opinion we shall quote immediately. He was misled by the intimate relation, the indissoluble connexion, the mutual dependence which exist between the brain and diaphragm. He took the effect for the cause. Hippocrates, who is in truth THE FATHER OF MEDICINE, on the other hand, entertained a very correct notion of the vast importance of the brain to man, as a reasoning animal; and remarks, "from the brain only proceed pleasure and joy, and laughter and sport, as well as griefs, anxieties, sorrows, and weeping. By it, we are wise and understand, and see, and hear, and appreciate. By it, we distinguish what is pleasant, and what is disagreeable; and by it, the same things do not please under all circumstances. By it, we are insane and delirious; experience terrors and fears, partly by night and partly by day; do

not recognise those who are with us; lose our habits, and forget our experience. All this we suffer from the brain, if it is not healthy; wherefore, I say that the brain is the messenger and interpreter of intelligence and wisdom." (DE MORBO SACRO.)

Blows, falls, pressure, concussion, or effusion of blood upon the brain, produce very marked consequences in the mental economy. Richerand mentions the case of a woman who had a carious affection of the skull, on whom he made some curious experiments. Observing that she experienced no pain from compression, he gently, while she was talking to him, pressed down the pledget of lint, when she suddenly ceased speaking. He withdrew the pledget, and asked her if she remembered the last question? She replied, she did not. Finding that the experiment was without pain or danger, he repeated it three times, and always with the same results. Sir Astley Cooper relates the case of a patient, who, after an injury of the head, was found talking in a language which no one in the hospital understood, till a Welsh woman coming in recognised it as Welsh. Dr. Conolly has recorded the case of a young clergyman, who met with a serious injury of the head a few days before his intended marriage; and though he recovered and lived to the age of eighty, his mind was entirely lost. He recollected nothing but his approaching marriage, talked of nothing else, and to the day of his death manifested the utmost anxiety and solicitude for the arrival of the appointed day. Dr. Gregory mentions a lady who was attacked by apoplexy: during her convalescence, her memory for things returned before her memory for words. She recognised the objects that surrounded her, but she could neither

name them, nor understand the meaning of their names. Dr. Beattie has left us an account of a scholar who forgot his Greek after receiving a blow upon the head, though his memory for other things remained unimpaired. Dr. Abercrombie has a similar relation of a similar accident. This patient, for several days, lost all recollection of his wife and children, though he remembered, and was conscious of the accident.

The most singular of these cases (and they could be multiplied) is that narrated by Sir Astley Cooper of a sailor who fell from the yard-arm of a vessel of war as she was about to sail from some port in the Mediterranean to Gibraltar. He was taken up insensible, and continued so during the passage to Gibraltar,—evincing no sign of sensibility, but by occasionally moving his finger. At Gibraltar he remained one month, subject to various remedial measures, but without effect—he still continued insensible. At length he was brought to England, and landed at Deptford, whence he was removed to St. Thomas's Hospital, and placed under the care of Mr. Cline, who, finding that the symptoms under which he labored were caused by depression of the skull, elevated the obnoxious portion. This was no sooner done, than he sat up, looked around him, and in a short time spoke! He fancied he was on the point of departure for Gibraltar, and the thirteen months which he had passed in insensibility appeared to him an instant of time!

The mind of many persons is tenacious of the occurrences of times long past, while it cannot retain the events of the day. Thus, old people remember the actions of their childhood clearly and distinctly, yet forget the movements of yesterday: sometimes the mind is partial in

its weakness. Dr. Brigham tells us of a patient whose memory, accurate in every other respect, was painfully forgetful of places. He recollected names, events, and dates, but did not remember his own or his neighbour's house, or that in which he had resided for many years. (INF. MEN. CUL. ON HEALTH.)

The author of a very excellent little work (PHIL. OF PHREN.) tells us, that "he was acquainted with a gentleman, who labored for some months under an affection of the brain, accompanied with partial paralysis of one side of the face, and who occasionally forgot 'portions' of words. If he intended to use, for example, the word 'circumstance,' he could pronounce and write the first three letters, 'cir,' but the rest of the word was in his mind a perfect blank: he could, for the time, neither spell nor pronounce it. Whilst in this mental state, he usually experienced darting pains deep in the orbit over the eyeballs." Dr. Abercrombie says, a most remarkable case of this kind is related in an American periodical work. The patient was a clergyman, about thirty years of age, a man of learning and acquirements, who, at the termination of a severe illness, I believe a tedious fever, was found to have lost the recollection of every thing, even the names of the most common objects. His health being restored, he began to acquire knowledge exactly as a child does. After learning the names of objects, he was taught to read, and then began to learn the Latin tongue. He had made considerable progress, when one day, in reading his lesson to his brother, who was his teacher, he suddenly stopped, and put his hand to his head. Being asked why he did so, he replied, "I feel a peculiar sensation in my head; and now, it appears to me that I knew all this

before." From that time he rapidly recovered his faculties.

The same author says, that he attended a lady, who from disease had been reduced to great weakness, with remarkable failure of her memory. "She had lost the recollection of a particular period of about ten or twelve years. She had formerly lived in another city; and the period of which she had lost the recollection was that during which she had lived in Edinburgh. Her ideas were consistent with each other, but they referred to things as they stood before her removal. She recovered her health after a considerable time, but remained in a state of imbecility resembling the dotage of old age." (DR. ABERCROMBIE ON DISEASES OF THE BRAIN.)

Much labor and time have been expended by physiologists in tracing the progress of the brain from infancy to old age; and the results seem to be, that at the period of birth all parts of the brain exist, though they are unfit for exercising their proper functions; and the Wenzels, who were twelve years engaged in the investigation, determined that "some parts of the brain increase in size most before birth, and others between birth and the seventh year, at which period the cerebral organs have acquired their full dimensions, and suffer no alteration in this respect afterwards." The integuments, however, as the hair, skin, fat, and skull, increasing, give an appearance of enlargement to the head, which is mistaken for the growth of the brain. After attaining full growth, says the author already quoted, the brain, like the eye, neither increases nor diminishes in size; its consistency or density may vary; but we have no reason to believe that any change takes place either in its form or size.

Notwithstanding the importance of the brain, however, animals can exist without it; and even the human fœtus has lived days without a brain. It is unnecessary to add, perhaps, that in these cases there was no reasoning faculty present. Dr. Elliotson says, "if the chorda oblongata exists, consciousness and volition become evident. Mr. Lawrence saw a child with no more encephalon than a bulb, which was a continuation for an inch above the foramen occipitale from the chorda spinalis, and to which all the nerves inclusively from the fifth to the ninth pair were connected. The child's breathing and temperature were natural; it discharged urine and fæces, and took food, and at first moved very briskly, and lived for days. M. Lallemand saw such another, which lived three days, and cried loudly. M. Olivier, one which not only cried and sucked, but squeezed strongly what was put into its hand." Even portions of it may be removed without apparently affecting the reason of the individual after recovery. In two instances, the author of this work removed portions of the brain without any permanent bad consequences. The first was the case of a brown or quadroon female child in Jamaica, who fell from a step on some sharp stones, and fractured the upper part of the right parietal bone. From this wound the brain protruded to the size of a nutmeg; and after endeavouring to reduce it ineffectually, it was removed by the scalpel, and the scalp brought together by adhesive straps. Fever supervened, but in a few days the child had entirely recovered. The second was that of a black boy; and, strange to say, in the same family, who, playing some tricks with a horse, received a kick on the left parietal bone, which fractured the skull, and the brain protruding, as in the former

case, was likewise removed. But he had several fits, and a protracted convalescence. Eventually, however, they both recovered, seemed to suffer nothing from the loss of brain, and for three years after, when we left that part of Jamaica, continued in excellent health. A remarkable symptom was present in both cases. Their appetite for food was so great, that it was found almost impossible to satisfy them during their illness and convalescence; but when their recovery was perfected, the appetite again returned to its normal state.

Even brute animals suffer much less, when portions of the brain are removed, than at first would be believed, nor are the effects of removal so instantly fatal. Dr. Elliotson, who has written so fully and so ably upon this subject, that he releases us from the necessity of further research, in speaking of acephaloid or headless children, remarks, "Unfeeling vivisectors, however, have not been contented with such facts supplied by nature, but have repeated them with the knife, and found, that if the cerebrum and cerebellum are removed in a living mammiferous brute, and the same portion of the chorda oblongata left, the poor thing cries, on attempts being made to give it pain, by pulling its whiskers, or applying pungent things to its nose or mouth, and it moves its extremities in order to escape from its annoyances, sometimes for two hours.*

* "ANATOMIE DE SYST. NERV. par MM. Majendie et Desmoulins, p. 560.—Dr. Majendie, for whose head the dogs, cats, and rabbits of France would in his active days have offered a reward, if they had known their own interest, says—It is droll to see animals skip and jump about of their own accord, after you have taken out all their brains a little before the optic tubercles. And as to new-born kittens, he says, they tumble over in all directions, and walk so nimbly, if you cut out their hemi-

An adult hedge-hog gratified Dr. Majendie by doing all this for two hours."

The Doctor subsequently remarks, "attempts to mutilate artificially are not calculated to afford much information. Brutes can generally give no opportunity of minutely observing what mental change has been produced by the removal. For instance, when a writer says that the removal of the cerebellum causes no other effect than sluggishness in the animal, how does he know that sexual desire is not extinguished? When various portions of brain are removed, how can any inference be drawn during the short existence of the poor animal, as to the state of its various faculties and inclinations? And when another asserts that, after the removal of the hemispheres and cerebellum, we may make observations whether the animal will copulate or not, how can he ascribe the disinclination that may occur to the removal, when any circumstance of suffering,—a wound, or confinement, or want of food,—will make it very difficult to induce an animal to indulge itself with sexual intercourse?"

We think this remark may be extended to the experimental operations on the nervous system generally. Physiologists, in instituting experiments, too frequently

spheres, that it is quite astonishing. (JOURN. DE PHYS. t. ii. p. 155.) About a century and a half ago—in 1673—M. Duvernay removed the cerebrum and cerebellum from a pigeon, and found the animal live for some time, search for aliment, etc." (DR. ELLIOTSON.) The barbarous custom in the West Indies, of killing poultry, by cutting off their heads and throwing them on the ground, has frequently enabled us to witness the extraordinary phenomena to which Majendie refers. A common domestic fowl will continue to leap for two or three minutes after its head has been removed, five or six feet from the ground, and after all seems to expire from the loss of blood.

look upon the subject of investigation before them in an isolated point of view, as if, when one of the tissues of the body for convenience is called the "nervous system," and another the "muscular," they were separate and distinct states of being, and not so intimately connected, that it has been said by one physiologist that the muscles were the ultimate fibrillæ of the nerves; and by others, that the nerves originated from the muscles, and centred in the brain!

It requires, therefore, much judgment, and a very profound acquaintance with the laws which regulate and govern animal life, to enable us to draw any correct conclusions from the experiments of Sir C. Bell, Sir E. Home, and M. Majendie, while the elaborate and ingenious deductions on the reflex power of the nerves by Dr. Marshall Hall, are so beautiful, and so ingenious, and so elegantly expressed, that they seize upon the mind, and obtain its suffrage before we have weighed the evidence or listened to the argument; and in sober truth, we are dazzled rather than convinced. All parts of the body are dependent on each other, and no single organ can suffer lesion without another (perhaps at a distance) sympathizing in the injury. A blow on the right temple produces paralysis on the left side—an affection of the liver exhibits itself by pain about the scapula—an abscess of the brain, by vomiting; gout, sometimes by a discharge from the urethra; and what various and fantastic fancies do not pregnancy, dyspepsia, and its offspring, hypochondriasis, present? Would not the bare enumeration of facts in support of this argument require a life-time? We therefore anxiously avoid the labor, and gladly decline the task. But it may be interesting to know what a great

physiologist has said upon the brain, when viewed as the organ of mind. He says, "the anterior development of the brain seems so truly characteristic of the human species, that certain philosophers have not hesitated to place in it the faculty by which man forms abstract ideas of the Divinity. There, according to the theory of Gall, is lodged the organ of theosophy. But in what manner, or by what means, does the will act in producing the various movements? What ties connect the sensations with the powers of volition? * * * The existence of a centre, to which all the sensations are carried, and from which all motions spring, is necessary to the unity of a thinking being, and to the harmony of the intellectual functions. But is this seat of the principle of motion and sensation circumscribed within the narrow limits of a mathematical point? Or rather, should it not be considered as diffused over nearly the whole brain? The latter appears to me to be the more probable opinion: were it otherwise, what could be the use of those divisions of the organ into several internal cavities? What could be the use of those prominences, all varying in their form? and of the arrangement of the two substances which enter into their structure? We may conjecture, with considerable probability, that each perception, each class of ideas, each faculty, is assigned to some peculiar part of the brain."

The same author, speaking of the understanding, says,—"In vain were the organs of sense laid open to all impressions of surrounding objects; in vain were there nerves for their transmission, these impressions were to us as they had never been, were there not provided a seat of consciousness in the brain; for it is there that

every sensation is felt. Sight, and sound, and odour and taste, are not felt in the organs they impress; it is the sensitive centre that sees, and hears, and smells, and tastes. You have only to interrupt by compression of the nerves the communication between the organ and the brain, and all consciousness of the impressions of objects, all sensation is suspended. The torturing pains of a whitlow cease if you bind the arm so strongly as to compress the nerve which carries the sensation to the brain. A living animal under experiments, suffers nothing from the most cruel laceration, if you have first cut the nerves of the parts on which you are operating. To conclude: the organs of sense, and the nerves which communicate with them and the brain, shall have suffered no injury, shall be in a perfect state for receiving and transmitting the sensitive impression; yet no phenomena of sensation can take place, if the brain be diseased—when it is compressed, for example, by a collection of fluid, or by a splinter from the skull, in a wound of the head. This organ is, therefore, the immediate instrument of sensations, of which impressions made on the others are only the occasional causes." (RICHERAND.)

We cannot pursue this subject further, without involving ourself in a discussion, which would lead very far from the consideration of the Art of Procuring Sound and Refreshing Slumber at Will. But we entreat our readers to recollect this quotation when they peruse the last chapter of this work, as our theory of the art depends much upon the admission of the truth and conclusiveness of M. Richerand's opinion. In the meanwhile, in support of the doctrine, we quote the following case from Dr. Elliotson. He says, "There are other sorts of remarkable cases,

which prove that consciousness is not always single. Mr. Combe quotes from the MEDICAL REPOSITORY the case of a Miss R——, in the United States, who naturally possessed a very good constitution, and arrived at adult age without having it impaired by disease. She possessed an excellent capacity, and enjoyed fair opportunities to enjoy knowledge.

"Besides the domestic arts and social attainments, she had improved her mind by reading and conversation, and was versed in penmanship. Her memory was capacious, and stored with a copious stock of ideas. Unexpectedly, and without any forewarning, she fell into a profound sleep, which continued several hours beyond the ordinary term. On waking she was discovered to have lost every trait of acquired knowledge. Her memory was a 'tabula rasa.' All vestiges both of words and things were obliterated and gone. It was found necessary for her to learn every thing again. She even acquired by new efforts, the art of spelling, reading, writing, and calculating; and gradually became acquainted with the persons and objects around, like a being for the first time brought into the world. In these exercises she made considerable proficiency. But after a few months another fit of somnolency invaded her. On rousing from it, she found herself restored to the state she was before the first paroxysm, but was wholly ignorant of every event and occurrence that had befallen her afterwards. The former condition of her existence she called the old state, and the latter the new state; and she is as unconscious of her double character as two distinct persons are of their respective natures. During four years and upwards, she had undergone periodical transitions from one of these states to

another. The alterations were always consequent upon a long and sound sleep. In her old state, she possessed all her original knowledge; in her new state, only what she had acquired since. If a gentleman or a lady be introduced to her in the old state, or vice versâ, and so on of all other matters, to know them satisfactorily, she must learn them in both states. In the old she possesses fine powers of penmanship, while in the new she writes a poor awkward hand; having not had time or means to become expert. In January, 1816, both the lady and her family were able to conduct affairs without embarrassment. By quickly knowing whether she is in the old or new state, they regulate their intercourse, and govern themselves accordingly." "I know the history of a noble family," says Spurzheim, "where a son had similar fits, accompanied by a special memory; so that consciousness was double—one for the ordinary state, and the other for the fits."

From these cases, and the facts and arguments which have preceded them, it will be seen, that the brain consists of a congeries of organs, whose functions are especially distinct and appropriated for particular purposes; that it is the seat of the intellectual powers; that in it essentially resides the principle of vigilance or wakefulness; and that we must therefore look for the organ or faculty of sleep in some other part of the body; and with a view to facilitate inquiry, we shall proceed, in the next chapter, to the description of SLEEPLESSNESS OR VIGILANCE.

CHAPTER XV.

SLEEPLESSNESS.—SOME MANIACS HAVE BEEN KNOWN NOT TO SLEEP FOR FORTY DAYS.—EXAMPLES OF SLEEPLESSNESS.—PICHEGRU.—MEAOU'ſSZE.—LEUCOMORI.—MODES OF PROCURING SLEEP.—THE TRUE SYSTEM NEGLECTED.—THE LATE MR. GARDNER.—BOERHAAVE.—WILLICH.—QUIN.—DR. REID. — CAPTAIN BARCLAY. — SIR WILLIAM COCKBURN. — DR. ELLIOTSON. — ALBERT THE GREAT.—GALL. — COINDET. — MACADAM. — MR. DUNCAN. — MR. BRAID. — MONTONISM. — JOHN PHILIPS, THE POET. — VOSSIUS.—OLIVIER.—LADY W. MONTAGUE.—CREOLE AND AFRICAN WOMEN. — SIR JOHN RENNIE.—MR. CATLOW.—SLEEP PRODUCED BY BRUSHING THE FOREHEAD. — THEORY OF ITS ACTION.—EXPERIMENTS.—REMARKS ON MR. CATLOW'S LECTURE.

SLEEPLESSNESS is an affection viewed in its organic relation common to man, and to man only. It is a sensibility so exquisite, that the veriest murmur, the rustling of a leaf—a breath of wind sighing through a jasmine lattice—an insect creeping on a pane of glass—nay, the very apprehension of a thought, lighter than the imprisoned zephyr that sleeps upon his bed of roses in the moonlit valley of Cashmere, will awaken to excitement trains of cerebral phenomena, which will depict in all the vividness of reality, representations of joys that are passing, or paint with all the precision of the calotype, glimpses of evils that are coming; and if this excitement be continued long, or if the impressions be intensely vivid, the organs lose their elasticity, the nervous energy becomes depraved, the senses perverted, the understanding lost, the judgment destroyed, and finally, the intellectual powers depart, and never more return!

What is the kingly crown, the ducal coronet, the envied mitre, the general's staff, the judge's ermine, or the scholar's lore, to him who wooes with fevered brain unwilling sleep, and sues, but sues in vain, for rest? Oh, miserable the wretch! who from constitution, or care, or anxiety, or sorrow, or grief, or love, has frighted from his couch "Nature's soft nurse"—

"Sleep, that knits up the ravell'd sleeve of Care."

The joys of home, paternal emotion, friendly intercourse, are soon destroyed. Listlessness and inertion supervene. All objects of nature or of art become indifferent. The blue sky, the green fields, the distant hills, the placid streams, lose their accustomed charms. The architectural triumph, the enkindling poem, the absorbing novel, or the speaking portrait, no longer become objects of interest or attraction. The sleepless sees, but he does not distinguish; he smells, but the odors are not grateful; he hears, but no sounds are musical; he feels, but no contact is pleasant. The appetite fails, digestion ceases, nutrition pauses, nay retrogrades, and haggard, the throeful mortal writhes his tortured body on the uneasy couch, and calls, but calls in vain, for sleep!

Such are the phenomena usually attendant upon broken rest, but which, as we have previously said, cannot be long sustained, even under the most exciting circumstances, except when hypochondriasis or mania is present. In these diseases patients have been known to live forty days and nights without sleep.* These are, however, extreme cases, and do not at present come under inquiry.

* See a paper by the author "On the Physiology of Animal Sustenance," in THE MEDICAL TIMES, No. 24, Vol. 5.

Again: there are some persons constitutionally sleepless, or whose organization has the power of nutrition and renovation so strongly developed, that in one-half or even one-third the time usually dedicated to rest by other men, their bodies become restored to their wonted strength, and they rise, from their short but salutary slumber, reinvigorated and refreshed.

Of some individual examples we have already made mention, and they need not therefore be repeated; but the following will be perhaps new to the reader. Sir Gilbert Blane stated to Sir J. Sinclair, that Pichegru told him, that, in the course of his active campaigns, he had for a whole year not averaged more than one hour of sleep in twenty-four hours; and Sir John Sinclair himself relates the case of a remarkably robust and healthy man, who died at the age of ninety-one, in Strathnaver, who slept only four hours in the twenty-four; while Gooch writes of a man, who lived to his seventy-third year in good health, and yet slept only fifteen minutes of the twenty-four; "and even this was a kind of dozing, and not a perfect sleep." This case appears to be doubted by Dr. Elliotson; but the Doctor does not seem to have been aware, that, in the mountainous and almost inaccessible regions of China, a race of men exist, who it is said never sleep at all. Mr. Lay,* speaking of the MEAOU-TSZE (the aborigines) of China, says, "this must have been a hardy race of men. It is accordingly said of them, that they do not wear thick clothes in cold weather, neither do they sleep by night! Whether a man be rich or poor,

* THE CHINESE AS THEY ARE. By Tradescant Lay, Esq., p. 324.

he is equally unmindful of sleep or clothing." But as a "pendant" to the MEAOU-TSZE, we have the LEUCOMORI, a race of people near the Oby, in the northern parts of Russia, who hibernate like tortoises under ground, from the twenty-seventh of November to the twenty-third of April, when they resuscitate themselves, and return to life!* Upon the two last statements, we will not venture to offer any comment, but leave our readers to draw their own conclusions.

It would be tedious to recapitulate, as it has been laborious to inquire, into the various means or modes which have been resorted to to procure sleep. In all the works which we have read, in all the authors we have consulted, and in all the researches we have made, we have ever found the question misunderstood, misstated, or altogether neglected. Yet, in most of those volumes, what depth of learning! What variety of knowledge! What cumulation of fact! So great indeed, that at first sight the mind shrinks from the contemplation; but, if tempted to examine the units of which the integer is composed, it familiarizes itself with the component parts, and thus becomes acquainted with the gross amount. But, why has the question been misunderstood, or misstated? Simply, because medical and physiological writers have been more desirous of displaying learning, than of recording facts; and Galen said this, or Celsus did that, has been too frequently the à fortiori argument with medical writers to silence their interrogators, or confound their inquisitors. Actuated therefore by a desire to judge for ourself, we used the word "discoverer," when

* COMMENTARIES ON RUSSIAN HISTORY. By Baron Herberstein.

speaking of the late Mr. Gardner, which, by many persons, perhaps, after they have read this chapter, may be considered as improperly applied, since Cullen had long before his time remarked, that "if the mind is attached to a single sensation, it is brought very nearly to the state of the total absence of impression;" and Boerhaave, without being aware of the principle upon which he founded his practice, acted upon it, when he directed water to be placed near a sleepless patient, so that it might drop into a brass pan; for this was but bringing the mind to "a single sensation." And Willich, who wrote but forty years ago, hit also on the principle, but never followed out the idea. His words are,—"Sleep is promoted by tranquillity of mind, by the absence of every stimulus to the body, by silence and darkness around us, and by a complete rest of the senses; by gently and uniformly affecting one of the senses; for instance, by music or reading; and lastly, by a gentle external motion of the whole body, as by rocking or sailing."

This was as near an approach to Gardner's discovery as was possible, without making the discovery itself, while many persons seem to have possessed the power, without knowing the principle. Quin, the actor, could slumber at any hour, and for any period—we have already mentioned Napoleon, the Duke of Wellington; and Macnish says that Dr. Reid could not only sleep as much as was required for eight and forty hours' wakefulness, but he could eat as much for the same period!—Captain Barclay also seems to have acquired, or possessed this power; for during the performance of his tremendous task, of walking one thousand miles in a thousand hours, he regularly dozed off to sleep when he had completed his mile,

waking again in time to renew his walk. Sir William Cockburn, Bart. of Bath, enjoys a similar faculty; but we believe his principle of sleep differs in some minor particulars from the monoidea doctrine of Gardner. Dr. Elliotson, whose authority is paramount, and who never touches any subject which he does not adorn, remarks, "I know a lady, who often remains awake, in spite of every thing, till her husband very gently rubs her foot; and by asserting to a patient my conviction, that the secret of an advertising hypnologist, whom I allowed to try his art upon the sleepless individual, and which he did for a time successfully, was to make him gently rub some part of his body till he slept; he confessed this to be the fact." We think, if this passage alludes to Mr. Gardner, that the gentleman either misunderstood, or purposely misled Dr. Elliotson, as will be seen in the sequel. However, to pursue the argument with which we set out, we may allege, in support of our opinion, that Gardner was the discoverer;—that many physiologists, among whom was Aristotle, referred all the intelligent and reasoning faculties of man to the brain; that Albert the Great, Bishop of Ratisbon in the 13th century, designed the chart of a head divided into regions containing the organs of "phantasie or imagination, which some call estimative or cogitative;" that another was published by Petrus Montagnana, in 1491; another, at Venice, in 1562, by Ludovico Dolce, in a work upon strengthening and preserving memory; another at Bologna, in 1670, in the APOLOGIA FISONOMICA, by Ghiradell Bolognonesei; and the plate of another head, so marked, published at Rome in 1632, is now in the British Museum—and all these were long before the time of Gall, who was not born till 1758—yet

no one attempts to deny—that, to that great man we owe the science of Phrenology, and consequently the only accurate knowledge of the organs of the brain, its physiology and functions. Again: quacks had been long in the habit of exhibiting burned sponge, in goitre; but it was to an analytical chemist, to Dr. Coindet, that we owe the knowledge, that its active principle was iodine; and, to compare large things with small, road-makers before Macadam constructed roads much in the same manner as did that great viafactor, but no one had shewn the rationale of the practice. On the same principle, then, we think the honor of the discovery of procuring Sound and Refreshing Sleep at Will should be awarded entirely to Gardner, though his system has been found capable of modification, and is still susceptible of improvement.

The fact is, that though many persons were conscious that monotony was a great provocative to sleep, few or none, until Gardner began to teach, reduced it to a principle. For, from the remotest ages, poets have celebrated the murmur of brooks, the waving of a field of corn, the ceaseless splash of ocean, the whisperings of groves, the hum of bees, in short, monotonism, as incentiments to repose; while the venerable Wordsworth adds, the continuous passage of a flock of sheep, the passing of a herd of oxen, a flight of birds, and even the ocean, as he styles it, "a grand monotonous idea;" and Macnish says, summing up nearly all these objects and images, the murmuring of a river, the sound of the Æolian harp, the echo of a distant cascade, the ticking of a clock, the hum of bees under a burning sun, and the pealing of a remote bell, all exercise the same influence;—but no one said, sleep was the product of monotony, or "MONOTONISM," before

Gardner. We have seen boys at school fall asleep by fixing their eyes steadily on a candle or a hole in the shutter; and the partially mesmeric phenomena which were exhibited by Mr. Duncan and Mr. Braid, very lately in the Hanover Square Rooms, were in our opinion to be referred to monotony, or as we have elsewhere ventured to call it, MONOTONISM, and not to any other specific cause. The principle, however, of the system here inculcated, would seem to us, to involve not only MONOTONISM as a powerful agent in inducing sleep, but the influence of the nerves of the medulla spinalis, acting through the medium of the diaphragm upon the organs of the brain.

We have frequently observed in the West Indies, that patients in fever or persons in health, were put to sleep by vannilation or fanning. In these cases, we were led to believe, that the effect could not be produced by the monotonous waving of the fan, generally a leaf of the sea-side grape (Coccoloba Uvifera), because the waving to and fro was always objected to, as being unpleasant to the eyes, and more frequently the attendant was directed to stand, so as not to be seen by the person, or if she did stand where she could be seen, he closed his eyes. It seems therefore probable, that the stimulus of cool air acting upon the nerves of the face (the late Sir Charles Bell's respiratory nerves?), and they again, with one continuous equable flow of nervous energy upon the organs of consciousness, monotonize the mind, bringing it to Cullen's "single sensation," or to "the state of the total absence of impression." This is, however, an indirect mode of procuring sleep. May we conceive, that the "fanning" of the diagram—the action of the external air upon the current of blood passing through the lungs—acts in a si-

milar manner, and that this monotonous action produces "a total absence of impression," which is sleep?

Combing the hair in some persons provokes slumber; in others it induces that pleasing train of thought which metaphysicians have agreed to call reverie. And Johnson, in his Life of John Philips, has deemed it worthy to notice, that he was fond of having his hair combed. "It is related of Philips," he says, "that when he was at school he seldom mingled in play with the other boys, but retired to his chamber; where his sovereign pleasure was to sit hour after hour, while his hair was combed by somebody, whose service he found means to procure." And in a note we are told, that "Isaac Vossius relates that he also delighted to have his hair combed when he could have it done, by barbers, or other persons skilled in the rules of prosody. Of the passage (continues the annotator, who could have been no physiologist,) that contains this ridiculous fancy, the following is a translation: 'Many people take delight in the rubbing of their limbs, and the combing of their hair; but these exercises would delight much more, if the servants at the baths, and the barbers, were so skilful in this art that they could express any measures with their fingers. I remember that I had more than once fallen into the hands of men of this sort who could imitate any measure of songs in combing the hair, so as sometimes to express very intelligibly iambics, trochees, dactyls, etc. from whence there arose to me no small delight.'" (See his Treatise, DE POEMATUM CANTU ET VIRIBUS RYTHMI. Oxon. 1673, p. 62, 8.)

This practice is very common among Turkish women. Olivier, who travelled by direction of the French Republican Government, speaks of the custom, as does Lady

Wortley Montague (we quote both these authors from memory); and the former adds, when they have bathed, dressed, and used the depilatory—for like the North Americans and some other nations, they remove all superfluous hairs from the body—and have fallen asleep, they have perhaps attained the summit of their present desires.

The African and Creole negro women in the West Indies are likewise passionately fond of having their hair combed, and it constitutes one of the favorite modes of passing their time. Frequently, under the shelter of the magnificent* sandbox, at the root of the sleepy tamarind, or around the whispering genip, or more commonly SUB DIVO, beneath the fulgid noonbeams of a scorching sun that sheds illimitable rays in burning floods of light, may be perceived in the vicinity of their houses as the traveller turns an angle of the road, ten or a dozen of these ebon maids combing, or coaxing with persevering slothfulness, the stubborn and ungracious wool wherewith Nature has so bountifully covered the pericrania of her dingy offspring, and, (I blush to relate this of the SABLE FAIR!) transporting from the lanarious coverts in which they have enjoyed a parasitic life, to the ivory mouth which closes to destroy them, those intrusive insects, to which man, even in his civilized condition, sometimes unwittingly and unwillingly gives a local habitation and—a name! At this pastime, or perhaps necessary detergent operation, they remain for several hours, the horizontal party basking, or sleeping in her Sappho's lap.

Is it proper to remark that this practice is also common

* HURA CREPITANS, TAMARINDICUS INDICUS, and MELLIOCOCCA BIJUGA.

among monkeys? And are we to conclude that this is another indication of reason?

While engaged in this chapter a friend informed us that it was related to him that the late Sir John Rennie, the architect of Waterloo Bridge and other public works, never went to sleep without previously having his hai combed at the back of his head with a fine tooth comb, and rubbed gently with the palm of the hand. This pectination and manipulation induced sound sleep, and after an hour's rest or more, he awoke refreshed and invigorated.

Happening to mention Philips's mania to the Secretary of a Society whose usefulness has extended to the four quarters of the globe, he informed us, that his father every day after dinner indulged in a similar fancy; and from other sources also, we have had similar relations. It would therefore seem, that the practice of pectination is more common than would be at first suspected or believed.

From combing the head, brushing the forehead to procure sleep appears to be but one step and a natural sequence. And accordingly, Mr. Catlow of Manchester, whose views on some questions connected with certain branches of physiology and nervous excitation are novel, and deserving of close investigation, published some experiments upon the subject, which, together with his theory upon that variety of sleep called the magnetic, as reported in his Lectures at Manchester, we abridge, for the information of our readers.

Mr. Catlow endeavours to establish, that the same means produce different soporific or mesmeric effects in different individuals; that different means produce (cæteris paribus) similar effects in the same or in different indi-

viduals; and, that as all the methods practised to induce the mesmeric phenomena, are closely allied by one fact or principle common to all, which in strict philosophy makes them all one method, so, all the effects must by every philosopher be considered, however apparently different, to be mutually and strictly allied to each other, by one common law of animal life; and that the real effects of mesmerism depend not merely on what was vaguely termed imagination, but on the undue continuance, and repetition of the same sensible impression.

This is the theory of Mr. Catlow, in support of which he performed the following experiments. "The first subject, was a fat, sleepy-looking little boy, named Anthony Green. Mr. Catlow commenced brushing the boy's forehead with a soft shaving-brush, and in eight minutes the boy's eyes were closed, and Mr. Catlow said he could not open them. Mr. Catlow then fixed the leg in a cataleptiform state. The boy was then awakened by what he called 'a pretty hard pinch' on the back of the hand. He asked him, 'Did you try to keep your eyes open?'

"'Yes, as much as I could.'

"'What effect did you feel from the brush?'

"'I did not feel it at all after a minute or two at first.'

"'Then, before you closed your eyes, you did not feel the brush?'

"'No, not at all.'

"Mr. Catlow said, that this boy had first been operated on with a cork on the forehead; and that he had performed fourteen experiments upon him with various results. Mr. Braid, who was present at these* experi-

* This gentleman was, we believe, the first publicly to announce that mesmeric sleep could be induced by

ments, was much gratified with Mr. Catlow's success, but thought that one circumstance complicated the experiment more than was necessary, namely, the constant and regular motion of the hand before the eyes. Mr. Catlow replied, that fixing the eyes was not the cause but the effect of the experiment. It was not a voluntary act, but the effect of what was called 'a brown study,' which was a ludicrous but complete instance of natural mesmerism.

"The next subject was a young woman named Elizabeth." (This patient had only been operated on once or twice before.) "Mr. Clay, the surgeon, remarked, that as two senses were operated on in the last experiment—touch and sight, it would be better if Mr. Catlow would now stand behind the chair. Mr. Catlow having complied with this suggestion, waved a pamphlet gently up and down, an inch or two distant from the subject's forehead and face, stating at the same time, 'that in this experiment the shadow had a distinct action and influence, though the object employed was not fixed like the cork, but in continual motion.' He added, 'he could produce the same effect by his hands.' In a few minutes, Elizabeth's eyes closed. Mr. Catlow then informed the audience, that last evening she was insensible to pain from pricking, and that he generally found a difference in sensibility between the two sides of the body. He then pricked the hand leg, and face of the subject; and in one case blood flowed, but Elizabeth shewed no sign of sensation.

"The next patient was a girl of thirteen or fourteen years of age. In five minutes, the waving of the pamphlet sent her to sleep. A succeeding patient was a

placing a piece of cork on the forehead, and looking intently at it.

younger girl, named Mary. In seven minutes and a half she was asleep by means of the brush. In two minutes she awoke. Her arm had been raised during this short period, but she did not recollect its being raised, and said that she felt more completely asleep by M. Lafontaine's method, than by waving the book before her eyes.

"The next subject was a factory girl of fifteen, named Celia, and a natural somnambulist. She was put to sleep by brushing the forehead in less than two minutes, while standing on the platform. Mr. Catlow then shewed another mode of impressing the sense of touch, which was suggested to him by the patient, Elizabeth, herself. This was gently to smoothe or stroke the hair from where it is parted near the crown of the head towards the ear on one side only; and it was remarked by the Doctor, that if electricity was developed in any of his experiments, it was in this, on the principle that rubbing a cat's back would elicit electric sparks. The patient went to sleep in about ten minutes under this process, which, we may observe (continues the reporter), is strikingly analogous to the fact mentioned by Mr. Wilson, surgeon, at one of M. Lafontaine's lectures, that a gentleman of this town always goes to sleep while the barber is cutting his hair. In nine minutes, the boy Green went to sleep; the back of his hand, which rested on a table, being brushed with the small shaving-brush. During this operation Celia awoke of herself; Mr. Catlow next fixed the boy's legs, then rigid, in a horizontal position; also one arm outstretched; and he stated that on touching the other arm it rose of itself, without his using any pressure. He then removed the rigidity first of one leg, then the other, and then one arm, by fanning each limb with a large fan, interposing some

sheets of paper between the current of air thus caused and the subject's face, and the patient remained asleep. He tried to induce the boy to rise and walk, but without effect. He was too fast asleep. He was then fanned a little more; but, in the attempt to get him to rise, he woke."

At the conclusion of the lecture, the lecturer declared, that the act of attention invariably fixes the eye and the muscles of the eye, as it does every other muscle; that the very attitude of attention is an illustration of this fixedness; and that, in that act, we have the rudiments of all the mesmeric phenomena.

"If I could arrest the attention," he said, "of any one of my audience, so that he would think of nothing but what I was doing at the moment, I could prick him with pins without his feeling it. And if the act of attention were continued too long—longer than is compatible with the individual constitution of the mind, I could suspend the sensibility altogether, and produce sleep—which varies according to the impressions on the senses through which I isolate or monopolize the attention; the phenomena presenting normal or natural sleep, or that more excited condition of the cerebral organs exhibited in catalepsy and somnambulism." (ABRIDGED FROM A MANCHESTER PAPER.)

We shall offer a few remarks on the experiments as well as the theory of Mr. Catlow.

We consider that they one and all present nothing more than an enhanced condition of the phenomena of ordinary sleep; for the patients could be awakened at pleasure, and were, with one exception, not insensible to odors,

punctures, or wounds, as were those whom we have seen mesmerised. Mr. Catlow woke the boy Green by "a pretty hard pinch;" but no pinches or even severe wounds could wake the young Frenchman exhibited by M. Lafontaine, nor violent shaking the girl Rosina, Dr. Elliotson's patient. We say severe wounds; for as we have before related, a miscreant on one occasion thrust a lancet or some sharp instrument into the upper part of the calf of the leg of this patient when in the mesmeric trance, without his evincing any sign of pain; nay, it was not until he had been demesmerised that the atrocity was discovered, from the quantity of blood on his trousers! With regard to the second case, we have already noticed the practice of putting patients to sleep in the West Indies by vannilation; and we refer the phenomena present here also, to the same state of deep sleep, notwithstanding that Mr. Catlow "pricked the hand, leg, and face, and that in one case blood flowed." We have ourself used the utmost exertions to wake a negro lad, yet he has continued asleep for five minutes after such attempts were made, even when struck, pulled, pinched, taken up in the arms, carried some distance and placed on his legs, on which he would stand for about a minute, and then, still asleep, would fall to the ground, if not prevented. This we have done not once but fifty times, and those who have had experience of negro sleepers, will very probably be able to relate much more extraordinary instances; such as their having been put on horseback, and made to ride some miles before they were awakened, and other anecdotes equally astonishing. To the case of Celia, as it is said she was a confirmed somnambulist, we need not refer; but it is remarkable

that one of the patients, Mary, expressed a knowledge of the difference between mesmerism and "monopolism." The rigidity of the muscles of the boy Green, certainly approaches his case to that of mesmeric trance. The analogy is at least marked; and it is possible to conceive, that not only was the condition of ordinary sleep in its more intense state present, but that a low degree of mesmerism also existed. Still we are of opinion that Mr. Catlow is mistaken in his views, and that there is nothing in the phenomena presented by his patients, which are not found in the ordinary deep sleep of persons of a low order of intellect, and in the negro attendants in the West Indies; and that the same effects can be produced by Cullen's "single sensation," Willich's "gently and uniformly affecting one organ of the senses by music or reading," the school-boy's plan of looking at a single object, Dr. Elliotson's case, of friction of the foot, or the MONOTONISM of Mr. Braid and Mr. Duncan; and lastly, Gardner's monoidea doctrine, which is an improvement, or rather a reduction to principle of all the modes of operating of all the foregoing practices, without any of their complexity. But to set the question at rest, and to shew at once the vast difference existing between the MONOPOLISM of Mr. Catlow, and the somnambulism of Mesmerism, we have only to consider the wonderful property which some mesmerised patients acquire of resisting the influence of electro-galvanism, and we shall arrive at the conclusion that the two states are as dissimilar, as sound sleep and absolute death.

Of Mr. Braid's experiments, as they so closely resemble Mr. Catlow's, we see no necessity here to speak at

length, as we shall refer to them in the next chapter. They have the merit of priority; and in a subject involving a question leading to the grave inquiry of the phenomena of abnormal sleep and mesmeric somnambulism, this is no unimportant honor.

THE HEAD PUBLISHED BY DOLCE IN 1562.

CHAPTER XVI.

CONTINUATION OF THE ARGUMENT IN LAST CHAPTER.—ACCELERATION OF THE PULSE.—OPINIONS UPON THE SUBJECT.—ARTERIALIZATION.—MEANS OF PRODUCING SLEEP.—INFLUENCE OF NARCOTICS.—DR. ROUPELL ON NARCOTISM.—IMPOSSIBILITY OF THINKING OF MORE THINGS THAN ONE, AT ONE AND THE SAME TIME.—JULIUS CÆSAR.—REFUTATION OF BICHAT'S DOCTRINE OF SLEEP. SLEEP A POSITIVE NOT A NEGATIVE STATE.—DR. MARSHALL HALL'S VIEW OF EPILEPSY.—MACNISH.—THE RATIONALE OF THE ART OF PROCURING SOUND AND REFRESHING SLUMBER AT WILL.—INCIDENTAL ADVICE, AND CONCLUSION.

In Mr. Braid's lecture on mesmeric sleep, alluded to in our last chapter, it will be found that he endeavoured to account for the mesmeric phenomena on the principle of monotonism. Now in that passage we find an opinion which we think erroneous, and which in a treatise like the present should if possible be refuted.

He speaks of "an accumulation of blood in the large vessels of the region of the heart." This condition of the blood-vessels is very doubtful. They may be distended; but there is no proof of an accumulation of blood, if by an accumulation is meant a gathering together and consequent stagnation of the molecules of any fluid.

We admit that it is common to say, that the pulse is accelerated or quickened, or hurried, after running or violent exercise, or in fevers, or slackened in some nervous or adynamic complaints; but it has always appeared to us that these terms were misapplied. It seems rather that the flow of blood from the heart to the extremities

is seldom or never quickened, except perhaps during the first minute or two of blood-letting. And to support this opinion we quote M. Majendie, who says, "the blood in the arteries is not alternately at rest and in motion; but on the contrary, it is in a continued succedaneous flow in the trunks and ramifications, and uniform in the smallest ramifications and divisions." And Dr. Parry long since proved that the beat of the pulse was entirely owing to the pressure exerted upon the artery, by the superjacent, subjacent, and surrounding organs; while Lamure found, that there was a slight displacement of the arteries every time they dilate. We are inclined to hazard the remark, that what is called accelerated motion of the blood in the larger vessels of the heart, is nothing more than an alteration in the dynamic condition of the solids. Or, to express ourself more in accordance with the views of modern physiologists, and of Dr. Marshall Hall in particular, the excito-motory system is increased or diminished in power. In the first case, rendering the muscular tissue firmer and more dense in volume, which then forcibly compresses the arteries and causes a hard or struggling pulse; and in the second case, being less firm, more flaccid, and presenting less resistance to the passage of the blood through the arteries, it flows equally and regularly without giving rise to the phenomenon of pulse. If this be true, to talk of accumulation in the larger vessels of the region of the heart, is not to advance our physiological knowledge.

Galen was aware that the heart shortened itself during its systole or contraction, and hence called its motion "pulsative;" and we know from the *simple* fact of bending and drawing the arm towards the shoulder, that volun-

tary muscles in action swell, shorten, harden, and become rigid. This action commences in, or owes its phenomena to volition, originating in the brain, but transmitted by the nerves to the muscles. In this case it has been said that there is an accumulation of nervous fluid, or nervous energy; but is it not rather a detention and condensation of arterial blood in the fibres of the muscles, similar to that which takes place in the strands of a rope when wetted or even exposed to damp?

It may be objected, that Haller thought that under increased action of the muscles, there was an increased flow of blood from the brain. This is extremely doubtful. Dr. Copland says, during violent exertions the return of blood from the brain is in some degree impeded. So it is possible to believe, that the cataleptiform or rigid state of the muscles, in Mr. Braid's experiments, was but a retention of fluid in their tissues, and sleep then cannot be owing, as he thinks, to the so-called accumulation of the blood in the larger vessels of the heart, but to another cause, of which we shall speak presently.

We have also the opinion of Dr. Abercrombie in our favor. He thinks that the brain is never at any one time fuller of blood than at another, and adduces some very ingenious experiments in support of his hypothesis. In these experiments, animals were bled to death; and yet the cerebral vessels were found surcharged with blood, thus giving countenance to the paradox, that death from blood-letting does not occur from exsanguinity, but apoplexy. It is but fair however to add, that Mr. Solly is of a contrary opinion, and thinks that he has proved that the brain is compressible, and consequently that it contains more blood at one time than another; and Mr. Crisp has

lately announced, that he has verified some of Mr. Solly's experiments. It is possible to conceive, if the circumstances under which the experiments were made are taken into consideration, that both parties are right; but we cannot delay now to shew in what manner their discrepancies may be reconciled.

Again: we are told by Mr. Braid that the larger blood-vessels being over-full, "the heart is stimulated to greater efforts, and in order to overcome its increased labor, it is compelled to quicken its velocity, to compensate for its diminished power." But he has here forgotten that before the heart could "quicken its velocity," it must have had the power; consequently he contradicts himself, when he says it does so, "to compensate for its diminished power."

It has been customary to speak of the "imperfect arterialization of the blood, which takes place in consequence of suppressed (modified) respiration;" and Mr. Braid adopts this pretty general opinion. We think this not only doubtful, but contrary to experience. There is no proof, that diminished respiration is the cause of imperfect arterialization, and as some infer from this assumption, sound sleep. We should say that it was rather the contrary; for in sleep, though respiration is much slower, and more equable than in the waking state, yet it has never been contended that the blood was less pure, or more carbonized after a sound night's rest, than after a hot day's ride, when we know the respiration is more rapid. Indeed, we have direct evidence to the contrary; for, in no condition of the body does nutrition proceed so favourably as during sleep, a position the case from Richerand, given in a preceding chapter, fully illustrates.

Now, as the process of nutrition owes its completion to arterial blood, it follows that arterial blood must be supplied in larger quantity during sleep than during our waking hours. Some allowance however must be made for the non-consumption of that portion requisite for the exertion of mind and body during the day, and the consequent gain of animal vigor and animal life; but we do not think that will account for the marked invigoration and increase of substance experienced after sleep. The first every man feels to be true; the second is proved by reference to the experiments of the Rev. Mr. Wasse, of Northumberland, which we well remember the present Professor of Anatomy and Surgery in the University of Edinburgh, Doctor Monro, was extremely fond of mentioning. Mr. Wasse determined from numerous experiments on young men, in nearly all conditions of life, that the difference between an individual's stature in the morning and the evening, was nearly an inch. This he accounted for by the pressure of the atmosphere on the intervertebral substance of the spinal column. But, would it not be more correct to say, that it was occasioned by a general evaporation of fluid from all the members of the body, as there is no doubt but that the body is not only shorter but less in volume in all parts in the evening, than in the morning? But if it be insisted that the intervertebral cartilage is subjected to greater pressure than the limbs, from the perpendicular position which it occupies, the condition of the soles of the feet must also be taken into account; for we have ascertained that the sole of the foot is much flatter, especially the cushion of the heel, in the evening than in the morning.

Again, if arterialization, or more properly speaking de-

carbonization, take place faster during rapid than slow inspiration, how is it that we find the blood of horses, that have died running, or hares that have been coursed to death, in a fluid state? Is not this fluidity a proof of the want of that vitality which is the distinguishing property of healthful blood? And, is it not fair to conclude, that a body which undergoes a marked change in color and property, by contact with another body, as the blood does by being subjected to the action of atmospheric air in the lungs, will have that change more thoroughly effected by allowing the bodies to remain some time in contact, rather than by bringing them rapidly together, and rapidly separating them? This is an inquiry which we regret our inability to prosecute, as it offers some highly interesting views of human pathology.

We have perhaps dwelt longer on Mr. Braid's theory than is consistent with the strict letter of this chapter; but, it must be borne in mind, that we have considered both that gentleman's and Mr. Catlow's experiments as indications of enhanced normal sleep, and not, as they suppose them, instances of analogous but subdued mesmeric phenomena. And it is to be recollected that Mr. Braid contends for "a complete abstraction of the mind, so as to keep it intently engaged on one subject, which includes an effort of the will." Now this is no more than the doctrine of Boerhaave, Cullen, Willich, and Gardner, though differently applied and explained; and we shall soon shew the superiority of Gardner's mode of procuring sleep over those practised by Mr. Catlow and Mr. Braid, the whole process being reduced to a single act of volition. It happens singularly enough, that we found accidentally, in a communication from Mr. S. L.

Barrallier of Milford, in the MEDICAL TIMES, No. 121, Vol. 5, an unexpected argument in support of our view of Mr. Braid's "monopolism." After speaking of this gentleman's experiments, Mr. Barrallier says, "It has been stated to me that a gentleman in this town (Milford) has for a number of years past been in the habit of inducing a state to him as refreshing as his usual sleep, by steadily fixing both his eyes in one direction for a few minutes, when he immediately falls asleep. Until he adopted that method, he scarcely slept at all, whereas, since he has adopted his own method, he can produce a state of sleep in a few minutes at any time."

Here, we observe, the same effects are produced as those in Mr. Braid's experiments, but there is not one word said, a hint dropped, or a suspicion entertained, that the gentleman had mesmerised himself.

It cannot be too frequently repeated, that mesmerism depends upon the presence of a fluid passing from one body to another, and not to monotonism; and that the mesmeric state is consequently as distinct from that of normal sleep, as is the apoplectic stupor from refreshing slumber. We infer the presence of this fluid from the fact, that "if we examine with a microscope the naked body, exposed during summer to the rays of a burning sun, it appears surrounded with a cloud of steam, which becomes invisible at a litle distance from the surface. And if the body is placed before a white wall, it is easy to distinguish the SHADOW OF THAT EMANATION." This is not the mesmeric fluid, but insensible perspiration; but the time may not be far distant, when the ingenuity of man may contrive a mesmerometer, as we have already electrometers, and that fluid be known also not only from

its effects, but from its composition; and the problem be solved whether it be a simple or compound body.*

Of other means which have been employed to produce sleep, the most reprehensible have been wine, alcohol, malt liquors, and narcotics. Of the former we need say no more, than that in moderate quantities they excite the latent sensibilities, promote the flow of nervous energy, open the heart, expand the feelings, cherish the affections, increase social happiness, and nourish all noble sentiments. In excess, they increase, excite, provoke, exaggerate, exestuate, and demonize the passions; while blasted prospects, ruined hopes, destroyed health, poverty, pain, sorrow, woe, wretchedness, and crime, generally follow their intemperate use, and bring the unhappy drunkard to a premature and miserable end.

The abuse of narcotics is in many respects similar, with this singular difference, that the opium eater is compelled to increase his dose in a geometrical ratio to produce the desired effect, while the spirit drinker is generally so saturated with alcohol, that a very small quantity will at times induce a perfect state of apoplectic intoxication.

Of the consideration of the influence of narcotics upon the nervous system, it would be impossible to enter at any length in a popular work, for it embraces a vast field of inquiry, crowded with objects of more or less interest, and diversified with extensive views replete with so many new and prodigious discoveries, that however anxious the inquirer may be to hasten to his

* The word "fluid" is used not in its general sense, but we can find no other word to express conveniently mesmeric influence.

journey's end, he is ever beset with novelty, attracted by curiosity, suprised by wonder, or captured by admiration. Or should he overcome these impediments, and proceed—when he imagines he has reached the visible horizon of his search, or when he thinks he has arrived at what he fondly hoped the termination of his wanderings, he finds he has but entered on the track of a new discovery, still unexplored, undescribed, and unknown.

It were to be wished, therefore, that some able mind would at once enter the field, and if possible drag from that obscurity in which they are involved, the singular energies which distinguish the action of the narcotic principle on the nervous system. If we consider with Mr. Mayo, that "nerves of motion take their rise from the same region with those nerves which transmit the impression by which their action is usually regulated;" and with Dr. Roupell, that "in approaching the operations of medicines upon the nervous system, we have remote as well as local effects to account for; that we have sensation both voluntary and involuntary to consider; that we have the functions of the brain, the spine, of the ganglia, and of the nerves to look to, any of which may be separately, or all may be simultaneously implicated; that there is a necessity for a recipient, a sentient, and a communicating portion; that we are frequently deceived by our own feelings as to the seat of disturbance;" that all parts of the body are directly and indirectly connected; that there exists a mutual dependence of one organ upon another, the respiratory on the cerebral and the cerebral on the respiratory, for example; and yet, that the function of every organ is fixed and limited, for we cannot think with the diaphragm, or

breathe with the brain; it will be seen that the inquiry is beset by difficulties which require no ordinary talents to overcome, and opposed by obstacles which demand no trifling genius to surmount; and in a word, that though narcotics depend proximately or really on the nerves for their impression on the brain, yet that they are modified if not altered in their transit through the digestive organs, and quickened in their operation, if not enhanced in their action, by means of the circulating medium.

That this is the fact can be proved both from analogy and by direct experiment. If we swallow the vaccine or other virus, little or no effect is produced upon the body. The molecules which compose the pus in either case, are digested, or are probably reduced to their primitive simplicity. But if we introduce ever so trifling a quantity of these poisons into the system, by vaccination or inoculation, disease generally ensues. Opium to a certain extent may be given to a dog, without producing any immediate effects. But if we inject ever so trifling a quantity into the jugular vein, drowsiness or coma instantly supervenes, and if the quantity be sufficient, death is the consequence. Another still more remarkable experiment may be cited. Give a dog a grain or more of phosphorus, no instantaneous effect is produced, and the poison acts in the usual way, being modified by the digestive apparatus. But if the same quantity be injected into a vein in a darkened room, we have then the extraordinary phenomenon of flame issuing from the nostrils and mouth of the animal! In these cases it would seem, that contact with the blood increases the power of the agent; or is this increased power to be attributed to direct application of the poisons to the nervous mass in all their undi-

minished or unreduced activity? But why, again, it may be asked, should narcotics produce such different results on different individuals at different times, as we know they do, and as we have already mentioned in our chapter on Trance?

We answer, our present state of knowledge does not enable us to offer any satisfactory explanation.

And the difficulty of this part of our subject, then, will be easily perceived by the medical reader; and he therefore will not expect an apology for not attempting to do what so many eminent men have failed to perform. But the general reader, for whom this work is especially written, and who opens a volume for amusement or instruction, will not be satisfied with such an explanation. He is at least entitled to learn the little that is known of narcotism, and how that little is inculcated. We therefore borrow from the Lectures of Dr. Roupell, delivered before the College of Physicians during the winter, the latest opinions on the subject. What this learned physician has done on the subject has been so well done, that it is to be wished he had not left so much undone.

"When consciousness," says the Doctor, "is suspended, the power of the will interfered with, and the mental faculties disturbed, greater difficulties are to be encountered in the way of explanation, from the number of organs affected. Besides the spine, the seat of simple sensation and motion, we have the brain, the seat of the mental powers, the medulla oblongata of volition, and the faculty of sensation, all concerned in the action of narcotics. Still the laws of nature are simple; and by adhering to our rule, that medicines influence function, and, proceeding analytically, we may approach the explanation of this im-

portant class of sedatives. Insensibility, coma, narcotism more or less profound, is the great feature of this order of remedies. In the first place, this condition should be viewed as antagonising consciousness, and, inseparable from its existence; in order to be for a certain time awake, it is essential that sleep should take place. Under ordinary circumstances, it occurs periodically, but, insensibility may at any time be produced, by causes which disturb the circulation through the brain, as by ligature, on the large vessels, or round the neck, and by all unusual and powerful impressions—such as extensive injuries, great cold, hasty draughts of alcohol, and by the want of the due purification, or of the proper changes in the blood.

"If, proceeding thus analytically, we turn to the operation of narcotics, we find that they act very variously—some, producing an effect especially on sentient nerves, as aconite; others, on the muscles, as conium,—but all producing stupor, and an alteration in the circulating fluids. Opium, applied to muscles, paralyzes them—placed in contact with a nerve, it deprives it of the power, even of conveying the stimulus of galvanism. We have thus evidence of a local effect; one, however, which will not explain the general results of its ingestion. To produce its operation on the system, it must enter the vessels; and then what ensues? Excitement in the first place, if the quantity be small; if a large dose be taken, the organic processes are all interfered with, or disturbed, digestion is disordered, bile is not poured out, the secretions from the intestinal canal and bladder are diminished; the excretions, too, would appear not only to be altered in quantity, but modified; more lithic acid is formed, and more carbonic acid is eliminated. Thus, it may be inferred

that the ganglionic system, the organic nervous fibres and the sympathetic, are chiefly concerned. The other phenomena are capable of receiving a consequent explanation, viz. the headache, vertigo, and stupor, which at all events, we see take place when the secretion from the kidneys is suspended, and when carbonic acid is present in excess.

"What the actual result of taking opium upon the nerves may be, is yet uncertain. It is not clear, whether mingled with the blood it resists decomposition. The elements of morphia, combined as they are in that principle, resist many chemical agencies; it may be boiled repeatedly in alcohol without injury—it may be combined with acids, and thrown down, again and again unchanged—it may be mixed with an infinitude of substances, yet re-produced in a state of purity—it resists putrefaction. M. Orfila and Lesneur have made numerous experiments on this subject. They found the traces of this salt, between fourteen and fifteen months after it had been exposed to the air, in contact with portions of intestine and soup, containing both animal and vegetable substances. In this instance, the quantity of morphia was a drachm and a half, but they detected it in an experiment, where six grains only were employed. These were dissolved in a pint and a half of water, into which a portion of intestine, twice the length of the body, was immersed. The whole was left exposed to the air, from the 18th of July, 1826, to May, 1827. The analysis was then made, when, in spite of the putrefactive fermentation, the vegetable principle was discovered. When the acetate of morphia in solution was left exposed to the atmosphere, these able investigators observed, that the acetic acid had under-

gone decomposition, but that the morphia remained unchanged.

"Many salts resist the operation of digestion, or in solution are absorbed, and, like nitre, ejected, unchanged, from the system. If this were the case with morphia, we should find it in the excretions and animal fluids. We have evidence to show that leeches applied to persons under the influence of opium have died. That an infant at the breast has suffered stupor after the mother had taken a dose of this narcotic. That opium has been detected in the blood, in the perspiration, and in the urine of persons laboring under its effects. This would appear conclusive, were it not that M. Lassaigne has assayed under similar circumstances to detect the narcotic, yet failed to produce it. We may then admit our uncertainty upon this head. The further investigation of the structure of nerves, may throw light upon the phenomena of nervous action. The nerves are tubular—they contain fluid. Is there a circulation within these tubes? Are they capable of distension? Much then still remains to be made out; but in establishing certain points, the insensibility of the muscles by contact, for example, the necessity in order to produce constitutional effects, that narcotics should be absorbed, the disturbance of the nutritive functions in consequence, and some local effects also, as is shown by the severe itching of the skin, which not unfrequently ensues, are all important. The mental faculties are disturbed, but not so deeply in cases of narcotism as in actual injury to the brain, such as in apoplexy. The best means for dissipating the stupor would lead us to argue, that the brain was only affected secondarily, for rousing the patient by all possible means, and

securing the purification of the blood by respiration in the air, are the effectual antidotes."

Having, we think, nearly exhausted the preliminary subjects connected with the Art of Procuring Sound and Refreshing Slumber at Will, we shall now proceed to the elucidation of that principle. It must not however be forgotten, that all the subjects upon which we have touched, are to be considered as intimately and indissolubly connected with normal or natural sleep; that in hallucination, one or more organs of the brain, is or are preternaturally excited; that in trance they are sometimes awake to surrounding objects, but unable either to act upon the voluntary organs, or the voluntary organs are insusceptible of their action; that in dreams, memory and imagination are awakened, and judgment and comparison dormant, and so on in catalepsy, ecstasy, and the other conditions of the cerebral system on which we have already dilated.

It is generally believed that we can think of many things at once, in confirmation of which opinion we are told, that Cæsar could dictate a letter, write another, and converse at the same time, on three different subjects. This is true only so far as it proves the vigorous activity of his mind, but not that it could entertain three different ideas at one and the same time. This is not possible, as the following experiment will prove. Take a mirror and look into it, and then endeavour to fix your eyes and afterwards your attention upon the features of your face. Look steadily, and then try if you can see and think of more than one feature at a time. You will find that you cannot; and that if you succeed in fixing attention upon one of them, you are in danger of falling asleep, or of

becoming cataleptic. Again, let a man endeavour to think of his wife and children, or in the event of not being a husband, of any two or more objects which interest him. He will find that he cannot with the most intense application fix more than one of these objects in his mind's eye at the same moment, and that if he succeeds the vision lasts but a second; in short, the impression is not appreciable. Thus we may think of a large building, (e. g.) the National Gallery, as a whole, but it will be found on trial, that we cannot think of and imprint on the mind at one and the same interval of time, any two members of that building. Upon these facts is founded the doctrine of monotism.

But this is mistaking the result for the cause. The cause of sleep lies more remote, and must be sought for elsewhere than in mere monotony. In Macnish's work we find the question thus treated; and we shall quote the passage presently at length, but in the mean time must entreat our readers' patience until we dispose of an objection which we took while speaking of Bichat's remarks on Sleep.

It will be recollected that we said, "Bichat's remarks are rather illustrations than proofs that the state of fatigue of any particular organ is exactly the same as its condition in sleep."*

That the state of fatigue in any particular organ is not exactly the same as its condition in sleep, we infer from the fact, that over-fatigue, or over-excitement, or excitement ever so trifling of the voluntary organs, if we happen not to be accustomed to it, will often prevent instead of predisposing or inducing sleep. Again, we sleep periodically and at stated times, whether fatigued or

* P. 31.

not, while many possess the faculty of sleep at will, at all times and all places. We are told by Bourrienne, that when Napoleon was at Tilsit, sitting in a chair next the Emperor Alexander of Russia, and witnessing the performance of the Cid of Corneille, suddenly in the very midst of the representation, as if wishing to abstract himself from the mimic scene before him, he folded his arms, reclined his head upon his chest, and was sound asleep. Here was the exertion of a faculty—a power distinct from the mere condition of fatigue: it was functional manifestation of some organ within the body. But where is this organ situated? In the cerebrum, cerebellum, or medulla oblongata? We think in no one of these organs, but that we are to look for it in the medulla spinalis, or spinal cord—and that it will be found between the cervical and lumber vertebræ in the GANGLIA formed from the nerves given off by this portion of the spinal column. The reasons which induce us to place it in this region are, that sleep is intimately connected with respiration, that the true functions of the spinal cord have never been satisfactorily ascertained;* that the ganglionic system is

* Although we may grant that the columns of the spinal cord seem concerned to a certain extent in the performance of distinct functions, yet we conceive that these functions have not yet been appropriated with sufficient precision to the different parts of the cord and organs of its nerves, and that this subject stands much in need of further investigation. (DR. COPLAND.) The spinal column is independent of the encephalic organ. It is found in many animals which possess no brain, is the centre of the nervous system, and its volume is not proportionate to that of this organ. The ox, horse, and sheep, in proportion to their size, have smaller brains than man, but they have a much larger spinal cord. It is found in acephalous fœtuses, or where the brain never ex-

the antagonism of the cerebral; and lastly, that no phenomena can arise, or can manifest themselves in the body purely from the cessation of activity of any organs, but must owe their presence to some direct cause. We cannot walk without the muscles; we cannot think without the brain; we cannot feel without the nerves; we cannot digest without the stomach; we cannot breathe without the lungs; we cannot hear without the auditory apparatus. Why then should we sleep without organs adapted for that purpose?

Another division of the sensorial power, which comprises the sensibility and energy of the nervous system, is, into the Brain, appropriated to the mind; the Medulla Oblongata, to hearing, seeing, smell, and taste; the Medulla Spinalis, or spinal marrow, to touch and voluntary motion; and the Great Sympathetic nerve, to the thoracic and abdominal viscera. In other words, we think by the Brain; we hear, see, smell, and taste by the nerves, of the Medulla Oblongata; we move and feel by those of the Medulla Spinalis; while the heart throbs, and the stomach, intestines, liver, etc., act by means of the Great Sympathetic nerve. (MACNISH.)

isted. The special functions that may be assigned to the spinal cord are different from those performed by the brain. In the spinal marrow resides the source of all the movements both voluntary and involuntary, that are performed by the animal economy. It presides over those of the heart, of all the muscles of the interior life, as well as those over the locomotive apparatus; and while the brain, reserved for the most noble and most important functions, seems exclusively charged with the operations of intelligence and thought, the spinal marrow holds under its control all the contractile organs, and it is by its influence that all their contractions are executed. (RICHERAND.)

Sleep, then, is not a negative, but a positive state of existence; and differs from death, which is a negative quality, in this: that death is the total absence of sensation, voluntary motion, assimilation, and all vital phenomena, whereas sleep is the property of escaping reflection; while respiration, circulation, nutrition, and sometimes even cerebral phenomena and locomotion are present, and proceed without interruption and without inconvenience. We have an illustration, if not a proof of this in one of the experiments of M. Fleurens. When he removed the cerebrum from an animal, it was thrown into a state resembling sleep; while, if he removed the cerebellum, it was brought to a state resembling intoxication: thus shewing the functions of thought (wakefulness) to reside in the one, and the property of locomotion in the other. When therefore the cerebral organs are rendered quiescent from whatever cause, or are not stimulated to action by external stimuli, light, sound, caloricity, or curiosity, —which may involve all these elements—the ganglionic system instantly resumes its power—that power which is exclusively possessed in the fœtus, and then the vital phenomena progress, to repair the loss which the hours of wakefulness have caused.

This opinion corresponds with the view Dr. Marshall Hall has taken of the proximate cause of epilepsy—a disease which in some of its symptoms strongly resembles abnormal sleep. He thinks that the very first symptom is generally if not always of the true spinal kind. We have constriction of the throat, closure of the larynx more or less complete; then follow violent expiratory efforts and convulsive movements of the trunk and limbs. Intermediately and even without the convulsive move-

ments, the cerebrum is affected with congestion, and a multitude of cerebral symptoms occur; flashes of light, tinnitus aurium (singing in the ears), the aura epileptica momentary oblivion, and other symptoms supervene. Then as parts of the general convulsion, the tongue protrudes and is bitten, the sphincters generally are relaxed, and as consequences or effects of these convulsive movements, the cerebrum is congested (?) and there is coma or deep sleep. If this state be continued long, more alarming symptoms appear, the respiration becomes labored, oppressive, stertorous—mucous rattle is heard, the true spinal and ganglionic systems become fatally involved, and finally, death follows.

This is the progression of the order of the phenomena of sleep in an enhanced and fatal form; the orgasm of a highly-excited condition of the ganglionic system. But notwithstanding all that we have said, our observations are to be considered rather as hints towards a more careful examination of the question, than as an established fact, that the faculty of sleep resides exclusively in the ganglionic system.

We now return to the subject more immediately before us—namely, the means of procuring sleep; and first, of Macnish's formula.

"I have," he says, "often coaxed myself to sleep by internally repeating, half a dozen of times, any well-known rhyme. While doing so the ideas must be strictly directed to this particular theme, and prevented from wandering; for sometimes during the process of repetition, the mind takes a strange turn, and performs two offices at the same time, being directed to the rhyme on one hand, and something else on the other; and it will

be found, that the hold it has of the former is always much weaker than of the latter. The great secret is, by a strong effort of the will, to compel it to depart from the favorite train of thought into which it has run, and address itself solely to the verbal repetition of what is substituted in its place. If this is persevered in, it will generally be found to succeed; and I would recommend all those who are prevented from sleeping, in consequence of too active a flow of ideas, to try the experiment. As has been already remarked, the more the mind is brought to turn upon a single impression, the more closely it is made to approach to the state of sleep, which is the total absence of all impressions."

It will be seen here that Macnish is mistaken when he supposes that the mind can "perform two offices at the same time." It is the rapidity with which the organs are excited one after the other that deceived him. Indeed, he seems to have suspected this fact; for he remarks, it "will be found, that the hold it has of the former (the rhyme) is always much weaker than the latter" (something else). "The great secret," he continues, "is by a strong effort of the will to compel it to depart, etc." Here again he mistakes effect for cause; while the sentence is an infelicitous mode of expressing nascent activity of a simple function. M. Fleurens very properly remarks, "No movement proceeds immediately from the will. The will is the exciting and determining cause of certain movements; but it is never the efficient or effective cause of any." The effort of insulation of thought therefore, is only the commencement of the activity of the sleeping faculty—a faculty in animals, which would be nearly always in action, but for the antagonism of locomotion, to procure food, and of thought,

to keep awake the sentient powers. Any one can satisfy himself of this fact by giving way, as it is termed, to sloth and inactivity. He will find that the more he indulges, the more he will desire indolence; the less he walks, the greater exertion locomotion will cost him. In this instance the vital, involuntary,* or ganglionic system, acquires a mastery, and an oppressive obesity is obtained at the expense of the nobler faculties of organization.

It is now to be hoped, that the reader is possessed of a sufficient knowledge of the human economy, to enable him to understand the principles upon which is founded the following system of procuring Sound and Refreshing Sleep at Will.

In the first place, we will suppose a person moderately sleepless. He has retired to bed and cannot rest. He tosses and tumbles about. Turns first on one side and then on the other. Shifts his pillow; pulls the bed-clothes over his shoulders; draws his knees up to his abdomen; places his right arm under his head; in short, exhausts the resources usually put in requisition on these occasions, and yet has failed to procure nature's sweet restorer—balmy sleep. What is then to be done?

Rabelais tells a story of some monks, who, oppressed with wakefulness, resolutely addressed themselves to prayer, and before they had concluded half a dozen aves, or pater-nosters, we forget which, they all fell asleep. Macnish repeated some lines of poetry; Sir John Sinclair counted, and Franklin took his air-bath—that is, walked about his chamber "sans-culottes." All these resources

* Partially involuntary as far as respiration and sleep are concerned only. Assimilation, circulation, etc. proceed independent of volition.

seem at times to have produced the desired effect, but never to have been always successful. The following plan has never failed, so far as we are aware, but in two instances, and they are remarkable cases, as both the parties move in very different spheres of life—the one being an ornament to the House of Lords, the other the talented Editor of a morning journal.

We then suppose all these attempts have failed, and the patient, for he is indeed a "sufferer" who cannot sleep, still awake.

Let him turn on his right side, place his head comfortably on the pillow, so that it exactly occupies the angle a line drawn from the head to the shoulder would form and then slightly closing his lips, take rather a full inspiration, breathing as much as he possibly can through the nostrils. This however is not absolutely necessary, as some persons breathe always through their mouths during sleep, and rest as sound as those who do not. Having taken a full inspiration, the lungs are then to be left to their own action—that is, the respiration is neither to be accelerated nor retarded. The attention must now be fixed upon the action in which the patient is engaged. He must depict to himself that he sees the breath passing from his nostrils in a continuous stream, and the very instant that he brings his mind to conceive this apart from all other ideas, consciousness and memory depart; imagination slumbers; fancy becomes dormant; thought subdued; the sentient faculties lose their susceptibility; the vital or ganglionic system assumes the sovereignty; and as we before remarked, he no longer wakes, but sleeps.

This train of phenomena is but the effort of a moment

The instant the mind is brought to the contemplation of a single sensation, that instant the sensorium abdicates the throne, and the hypnotic faculty steeps it in oblivion.

Sponging the body before retiring to rest, whether in winter or summer, and rubbing the surface afterwards with a coarse towel, are preliminary steps which conduce much to sound repose.

If sleeplessness be the effect of severe pain, an anodyne, under advice of the medical attendant, may be taken; but this, if possible, should be avoided. If from cold feet, a blanket at the foot of the bed between the sheets, will give the necessary heat; or, what is as effective, sponge the feet with a coarse towel dipped in water; then dry them well, and put on a clean pair of worsted socks. This precaution should be taken by all persons who are liable to colds, coughs and asthmas, and East and West Indians should never, till they have become acclimatized, sleep without them.

On no account should the bed be placed so that the rays of light from the window will fall upon the eyes, or be allowed to stream in upon them horizontally. In such cases, sound sleep is nearly impossible.

The bed-room should be large and airy, and in winter, a fire should be lighted in it at least two hours before the period of retiring. The reprehensible custom of going from a parlour or drawing-room heated to seventy or eighty degrees, to a room where water is probably freezing, is the remains of a barbaric ignorance, the existence of which seems to us almost incredible in the nineteenth century. The saving will be very great; not only in the doctor's, but the butcher's bill, for Liebig observes, "our clothes are but equivalents for our food. The

warmer we clothe ourselves, the more we lessen the necessity for eating, because the loss of warmth, the cooling, and therewith the compensation to be effected by food, is lessened. If we went naked as the Indians, or were exposed to cold in the North, by hunting or fishing, we should be able to devour half a calf, and afterwards more than a dozen tallow candles, as warm-clothed travellers with astonishment have told us. We should be able to consume the same quantity of spirit, or of oil, without injury; because the carbon and hydrogen which they contain, serve to counterbalance the external temperature." This is a hint, then, worth a whole library of medical recipes for colds, coughs, and asthmas.

We had intended to offer a few observations on the means which tend to promote health, and consequently sound sleep. But having already exceeded the limits of a treatise, we must defer the performance to a future opportunity; for throughout, we have endeavoured to be copious without prolixity; instructive without dogmatism; amusing without trifling; and argumentative without verbosity; and we shall not therefore now violate at the conclusion, the laws which we prescribed to ourself at the commencement, and adhered to throughout the work.

Finally, we believe, if it be possible to lengthen life by artificial means to an indefinite period,—and with Lord Bacon, Darwin, Herder, Munro, and Richerand, we see nothing in the body itself which precludes this hope—it must be by the subjugation of the cerebral organs to the Faculty of Sleep; or in other words, by acquiring the exercise of that property at will, by which the vital powers are permitted to progress in nutrition and assimilation unfettered or uninterrupted by the secretion of thought.

Indeed Lord Bacon most emphatically declares his conviction of the truth of this theory, for after inculcating the necessity of a cooling and moderate diet to repair the waste of the body, he extols narcotics because they produce sleep, "as the true balm of life and the best means of prolonging life." But this great philosopher, by the inductive philosophy of which he was the architect, was led to an incorrect assumption of means to an end. Satisfied that sleep was the restorer of health and the creator of vigor to the body, serenity to the mind, and vivacity to the spirits, he concluded that whatever produced sleep, must be auxiliary or conducive to longevity.

Experience however proves that narcotics are hurtful; and we therefore the more confidently recommend as preferable, the practice which we have laid down, and to which we are greatly indebted for health, and for a steady and equable flow of spirits, which enable us to bear the evils of life with fortitude, and to look out from ourself on the wide scheme of creation with gratitude and love to the Great Architect of All.

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